



# Federal Lands Highway Road Inventory Program

Road Inventory and Condition Assessment



**Golden Gate  
National Recreation Area  
GOGA – 8140**

**Cycle 5 Report**

**Prepared By: Federal Highway Administration  
Road Inventory Program (RIP)  
Data Collection Date: 02/2010  
Report Date: 05/2011**

# Golden Gate National Recreation Area in California



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# Section 1 Introduction



## Golden Gate National Recreation Area



Federal Lands Highway  
Road Inventory Program



## INTRODUCTION

The Federal Highway Administration, (FHWA), in the mid 1970s, was charged with the task of identifying surface condition deficiencies and corrective priorities on National Park Service (NPS) roads and parkways. Additionally, FHWA was tasked with establishing an integrated maintenance features inventory, locating features such as culverts, guardrails, and signs, among others, along NPS roads and parkways. As a result, in 1976 the NPS and FHWA entered into an MOA (Memorandum Of Agreement) which established the RIP (Road Inventory Program). This MOA was terminated and revised in 1980 to establish a new MOA aiming to update RIP data and develop a long-range program to improve and maintain NPS roads to designated condition standards and establish a maintenance management program.

The FHWA completed this initial phase of the RIP in the early 1980s. As a result of this effort, each NPS site included in the study received a RIP Report known as the “Brown Book” which included the information collected during this first RIP phase.

In the 1990s, the effort was again renewed to update and maintain the RIP data. By this time the computer age was upon us and a process was employed that relied heavily on electronic data collection and computer technology. A cyclical program was developed and the RIP completed two cycles of data collection from 1994 to 2001. Cycle 1, starting in 1994, was conducted in 44 “large parks” (parks containing 10 or more paved route miles). Cycle 2 began in 1997 and comprised 79 large parks and 5 small parks totaling 4,874 paved route miles. Each of these parks received a RIP Report known as the “Blue Book”. Cycle 3, from 2001 to 2004, was conducted in all parks, large and small, that contained any paved routes, including parking areas and, again, each park received a RIP Report and associated electronic files.

Cycle 4 was initiated in the spring of 2006 covering 86 large parks and several associated small parks consisting of 5,553 paved route miles and 6,232 paved parking areas. Cycle 4, at the time of this writing in April 2011, has completed data collection and is nearing completion with the delivery of all data to the NPS.

In 2005, the FHWA began implementing the use of a Pavement Management System (PMS) to assist the NPS in prioritizing Pavement Maintenance and Rehabilitation activities. The PMS used by FHWA is the Highway Pavement Management Application (HPMA) and this software has the ability to store inventory and condition data from RIP and forecast future performance using prediction models. Outputs include performance and condition reports at the National, Regional, Park, or Route level. A regional prioritized list and optimization have been produced for most regions and the Federal Highway Deferred Maintenance is calculated via the HPMA.

In an effort to improve the accuracy of treatment recommendations and pavement condition descriptions, an extensive study was completed throughout 2010 that has resulted in changes to the RIP condition reporting method, specifically the distresses and indexes that comprise the

Pavement Condition Rating (PCR). It was determined that a better representation of PCR could be achieved by modifying the relative impact certain distresses would have on the overall rating. The changes that were implemented were endorsed by management at both the FHWA and NPS in October 2010. These changes will allow greater use of RIP and HPMA data for not simply condition data reporting, but also as a reliable tool for project identification and selection. Because of these changes, the PCR Condition ratings reported in Cycle 5 do not directly relate to the condition ratings reported in previous cycle RIP Reports. For more detailed information about the changes, see Section 3 and Section 10 in this RIP Report.

Cycle 5 has launched in the summer of 2010 and will again comprise all parks, large and small, that are served by paved roads and/or parking areas. For Cycle 5, the decision was made to collect condition data in large parks on Functional Class 1, 2, and 7 paved routes only, as well as any new routes that were previously not collected. In small parks, all paved routes and parking areas will be collected. As a result, this will include 81 large parks with 4,459 paved route miles and 168 small parks with 529 paved route miles and associated paved parking areas.

Since 1984, the Road Inventory Program has been funded through the Federal Lands Highway Park Roads and Parkways (PRP) Program. Currently, coordination of the RIP with FLH is under the NPS Washington Headquarters Park Facility Management Division. The FLH Washington office coordinates policy and prepares national reports and needs assessment studies for Congress.

In 1998, the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21) amended Title 23 U.S.C., and inserted Section 204(a)(6) requiring the FHWA and NPS, to develop by rule, a Pavement Management System (PMS) applied to park roads and parkways serving the National Park System.

FLH is responsible for the accuracy of all data presented in this report. Any questions or comments concerning the contents of this report should be directed to the national RIP Coordinator located in Sterling, Virginia.

Respectfully,

FHWA RIP Team

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# Section 2 Park Route Inventory



## Golden Gate National Recreation Area



Federal Lands Highway  
Road Inventory Program

# Cycle 5 NPS/RIP Route ID Report

Road Inventory Program 05/05/2011

(Numerical By Route #)

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Shading Color Key:

White = Paved Routes, DCV Driven

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Red text denotes approx. mileage

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Black = State, Local or Private non-NPS Routes

■ = Concession Route Flag ON

\*Unpaved route data was obtained from NPS and was not inventoried by the Road Inventory Program (RIP).

\*\* DCV - Data Collection Vehicle

NC - Not Collected

\*\*\* Only Functional Class 1, 2, & 7 routes, and previously uncollected routes were collected in Cycle 5

## GOGA

### GOLDEN GATE NATIONAL RECREATION AREA

Rte. No.	Cycle Collected	FMSS No.	Concess Route	Route Name	Route Description From	To	Maint. District	Paved Miles	Un-Paved Miles	Total Route Length	Func. Class	Manual Rated SQ/FT	Surf. Type	Area Maps
0104	5	42061		MITCHELL ROAD	FROM ROUTE 0105 (BUNKER ROAD) AT MP 3.56	TO ROUTE 0465 (OLD BUNKER ROAD)	FORT CRONKHITE	1.19	0.00	1.19	2	0	AS	3
0105	5	40733		BUNKER ROAD	FROM ROUTE 0417 (MURRAY CIRCLE) AT MP 0.51	TO BEGIN OF ROUTE 0465 (OLD BUNKER ROAD)	FORT BAKER / FORT BARRY / FORT CRONKHITE	3.78	0.00	3.78	1	0	AS	3,4
0107	5	40912		MCCULLOUGH ROAD	FROM ROUTE 0109 (CONZELMAN ROAD) AT MP 1.91	TO ROUTE 0105 (BUNKER ROAD) AT MP 1.71	FORT BARRY	0.92	0.00	0.92	2	0	AS	4
0108	5	40909		FIELD ROAD	FROM ROUTE 0105 (BUNKER ROAD) AT MP 3.11	TO INTERSECTION OF ROUTE 0432 (MENDELL ROAD) AT MP 0.00 AND ROUTE 0433 (POINT BONITA LIGHTHOUSE ROAD)	FORT BARRY	1.09	0.00	1.09	2	0	AS	3
0109	5	40734		CONZELMAN ROAD	FROM ROUTE 0417 (MURRAY CIRCLE) AT MP 0.00	TO ROUTE 0108 (FIELD ROAD) AT MP 0.99	FORT BAKER / FORT BARRY	4.82	0.00	4.82	1	0	AS	3,4
0200	NC	104012		OAKWOOD VALLEY ROAD	FROM ROUTE 5410 (TENNESSEE VALLEY ROAD)	TO END (AT TRAILHEAD)	TENNESSEE VALLEY	0.00	0.93	0.93	6	0	NV	
0204	NC	43436		SLIDE RANCH ACCESS ROAD	FROM SHORELINE HIGHWAY 1	TO SHORELINE HIGHWAY 1	STINSON BEACH	0.00	0.20	0.20	3	0	NV	
0205	4	14445		STINSON BEACH ACCESS ROAD	FROM SHORELINE HIGHWAY 1	TO ROUTE 0920D (STINSON BEACH SOUTH PARKING)	STINSON BEACH	0.32	0.00	0.32	3	0	AS	1
0206	NC	40916		SCHOOL HOUSE ROAD	FROM ROUTE 0108 (FIELD ROAD)	TO ROUTE 0948 (PARK SERVICE EMPLOYEE HOUSING)	FORT BARRY	0.00	0.25	0.25	3	0	NV	
0207	4	80009		SHELLDANCE ROAD	FROM STATE HIGHWAY 1	TO END AT NURSERY	SAN MATEO	0.17	0.00	0.17	3	0	AS	9
0208	5	104000		CONZELMAN-FIELD CONNECTOR ROAD	FROM ROUTE 0108 (FIELD ROAD) AT MP 0.61	TO ROUTE 0109 (CONZELMAN ROAD) AT MP 4.41	FORT BARRY	0.02	0.00	0.02	2	0	AS	3
0268	5	43283		DANES ROAD	FROM SAUSALITO LATERAL / ALEXANDER AVENUE	TO ROUTE 0105 (BUNKER ROAD) AT MP 0.57	FORT BAKER	0.15	0.00	0.15	1	0	AS	4
0269	NC	43282		BATTERY YATES LOOP ROAD (SATTERLEE ROAD)	FROM ROUTE 0425 (SOMMERVILLE ROAD)	TO END OF LOOP	FORT BAKER	0.00	0.40	0.40	3	0	GR	



# Cycle 5 NPS/RIP Route ID Report

Road Inventory Program 05/05/2011

(Numerical By Route #)

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**GOLDEN GATE NATIONAL RECREATION AREA**

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0418	5	43285		EAST ROAD	FROM SAUSALITO LATERAL / ALEXANDER AVENUE	TO ROUTE 0417 (MURRAY CIRCLE) AT MP 0.14	FORT BAKER	0.89	0.00	0.89	2	0	AS	4
0419	NC	43286		MOORE ROAD	FROM ROUTE 0109 (CONZELMAN ROAD)	TO END (LIME POINT)	FORT BAKER	0.00	0.60	0.60	6	0	NV	
0420	4	43989		MCREYNOLDS ROAD	FROM ROUTE 0105 (BUNKER ROAD) AT MP 0.02	TO ROUTE 0418 (EAST ROAD) AT MP 0.88	FORT BAKER	0.43	0.00	0.43	3	0	AS	4
0421	4	79906		SEITLER ROAD	FROM ROUTE 0420 (MCREYNOLDS ROAD) AT MP 0.21	TO ROUTE 0424 (SWAIN ROAD) AT MP 0.02	FORT BAKER	0.34	0.60	0.94	3	0	AS	4
0422	4	79908		KOBER STREET	FROM ROUTE 0417 (MURRAY CIRCLE) AT MP 0.33	TO ROUTE 0945 (BUILDING 533 PARKING)	FORT BAKER	0.14	0.00	0.14	3	0	AS	4
0423	4	79910		MERRILL STREET	FROM ROUTE 0421 (SEITLER ROAD) AT MP 0.31	TO END	FORT BAKER	0.10	0.00	0.10	3	0	AS	4
0424	4	103999		SWAIN ROAD	FROM ROUTE 0422 (KOBER STREET) SOUTH AT MP 0.03	TO ROUTE 0422 (KOBER STREET) NORTH AT MP 0.10	FORT BAKER	0.11	0.00	0.11	3	0	AS	4
0425	4	43288		SOMMERVILLE ROAD	FROM ROUTE 0109 (CONZELMAN ROAD) AT MP 0.03	TO ROUTE 0936 (BREITUNG PARKING)	FORT BAKER	0.26	0.00	0.26	3	0	AS	4
0426	4	40914		MENGES STREET	FROM ROUTE 0105 (BUNKER ROAD) AT MP 1.67	TO END	FORT BARRY	0.09	0.00	0.09	3	0	AS	4
0427	4	40911		LAMORAU DRIVE	FROM ROUTE 0105 (BUNKER ROAD) AT MP 1.48	TO END	FORT BARRY	0.11	0.00	0.11	3	0	AS	4
0428	4	40918		SMILEY STREET	FROM ROUTE 0427 (LAMORAU DRIVE) AT MP 0.04	TO ROUTE 0426 (MENGES STREET) AT MP 0.05	FORT BARRY	0.18	0.00	0.18	3	0	AS	4
0429	4	79911		BODSWORTH ROAD	FROM ROUTE 0108 (FIELD ROAD) AT MP 0.14	TO ROUTE 0413 (SIMMONDS ROAD) AT MP 0.13	FORT BARRY	0.05	0.00	0.05	3	0	AS	3
0430	4	79912		DEBRIS DISPOSAL ROAD	FROM ROUTE 0105 (BUNKER ROAD) AT MP 2.58	TO END OF PAVEMENT	FORT BARRY	0.16	0.00	0.16	3	0	AS	3
0431	4	40919		SMITH ROAD	FROM ROUTE 0105 (BUNKER ROAD) EAST AT MP 2.17	TO ROUTE 0105 (BUNKER ROAD) WEST AT MP 2.75	FORT BARRY	0.63	0.00	0.63	3	0	AS	3

# Cycle 5 NPS/RIP Route ID Report

Road Inventory Program 05/05/2011

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0432	4	40913		MENDELL ROAD	FROM INTERSECTION OF ROUTE 0108 (FIELD ROAD) AT MP 1.09 AND ROUTE 0433 (POINT BONITA LIGHTHOUSE ROAD) TO ROUTE 0954 (BIRD ROCK OVERLOOK PARKING)	FORT BARRY	0.21	0.00	0.21	3	0	AS	3
0433	4	104137		POINT BONITA LIGHTHOUSE ROAD	FROM ROUTE 0432 (MENDELL ROAD) AT ROUTE 0108 (FIELD ROAD) TO END AT TUNNEL	FORT BARRY	0.31	0.00	0.31	6	14,494	AS	3
0434	NC	38117		SUTRO HEIGHTS PARK LOOP	FROM CLEMENT STREET TO END OF LOOP	SAN FRANCISCO	0.00	0.50	0.50	6	0	GR	
0440	4	38116		SUTRO BATHS FIRE ROAD	FROM POINT LOBOS AVENUE TO END	SAN FRANCISCO	0.15	0.00	0.15	6	7,760	AS	7
0441	4	103907		STINSON BEACH ADMINISTRATION ROAD	FROM ROUTE 0205 (STINSON BEACH ACCESS ROAD) AT MP 0.22 TO GATE A FEW HUNDRED FEET BEFORE SHORELINE HIGHWAY 1	STINSON BEACH	0.07	0.00	0.07	3	0	AS	1
0442	4	103997		OCTAGON HOUSE ROAD (FORT MILEY)	FROM ROUTE 0401 (FORT MILEY WEST ACCESS ROAD) TO END OF LOOP	FORT MILEY	0.05	0.00	0.05	6	0	AS	7
0443	NC	43416		BANDUCCI RANCH ACCESS ROAD	FROM SHORELINE HIGHWAY 1 TO END AT RANCH	MUIR WOODS	0.00	0.50	0.50	5	0	GR	
0448	4	108263		FUNSTON STREET (FORT MASON)	FROM ROUTE 0606 (FRANKLIN STREET) AT MP 0.22 TO ROUTE 0930 (BLACK POINT BATTERY PARKING) BEHIND YOUTH HOSTEL	SAN FRANCISCO	0.08	0.00	0.08	3	0	AS	6
0449	NC	40741		RODEO VALLEY TRAIL FIRE ROAD	FROM ROUTE 0451 (BOBCAT TRAIL FIRE ROAD) TO ROUTE 0271	MARIN HEADLANDS	0.00	2.19	2.19	6	0	GR	
0450	NC	40738		COYOTE RIDGE FIRE ROAD	FROM COASTAL TRAIL TO MIWOK TRAIL	MUIR WOODS	0.00	1.04	1.04	6	0	GR	
0451	NC	40736		BOBCAT TRAIL FIRE ROAD	FROM ROUTE 0459 (MARINCELLO FIRE ROAD) TO END	MARIN HEADLANDS	0.00	4.00	4.00	6	0	GR	
0452	NC	38060		SWEENEY RIDGE TRAIL FIRE ROAD	FROM ROUTE 0453 (BAQUIANO TRAIL FIRE ROAD) TO END	SAN MATEO	0.00	1.10	1.10	6	0	GR	
0454	NC	38057		MORI RIDGE TRAIL FIRE ROAD	FROM ROUTE 0452 (SWEENEY RIDGE TRAIL FIRE ROAD) TO SHELLDANCE NURSERY	SAN MATEO	0.00	2.40	2.40	6	0	GR	
0455	NC	38059		SNEATH GATE TRAIL FIRE ROAD	FROM SNEATH LANE TO SWEENEY RIDGE	MUIR WOODS	0.00	2.20	2.20	6	0	GR	
0456	NC	43438		GREEN GULCH TRAIL FIRE ROAD	FROM COASTAL TRAIL TO SHORELINE HIGHWAY	MUIR WOODS	0.00	1.40	1.40	6	0	GR	



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0457	NC	43403		HAYPRESS TRAIL FIRE ROAD	FROM ROUTE 0410 (TENNESSEE VALLEY ROAD ) TO CAMPSITE	TENNESSEE VALLEY	0.00	0.66	0.66	6	0	GR	
0458	NC	43402		FOX TRAIL FIRE ROAD	FROM TENNESSEE VALLEY TRAIL TO COASTAL FIRE ROAD	MARIN HEADLANDS	0.00	1.10	1.10	6	0	GR	
0459	NC	88923		MARINCELLO FIRE ROAD	FROM ROUTE 0451 (BOBCAT TRAIL FIRE ROAD) TO TENNESSEE VALLEY TRAIL	TENNESSEE VALLEY	0.00	1.20	1.20	6	0	GR	
0460	NC	84420		WILLOW CAMP FIRE ROAD	FROM WEST RIDGEMONT BOULEVARD TO STINSON BEACH TOWN	STINSON BEACH	0.00	1.70	1.70	6	0	GR	
0461	NC	88238		COUNTY VIEW FIRE ROAD	FROM MIWOK TRAIL TO PARK BOUNDARY	MARIN HEADLANDS	0.00	0.60	0.60	6	0	GR	
0462	NC	43786		GREEN HILL FIRE ROAD	FROM HIGHWAY 1 TO DIAS RIDGE FIRE ROAD	MUIR WOODS	0.00	0.25	0.25	6	0	NV	
0463	NC	104145		LATTIE LANE	FROM PANORAMIC ROAD TO PARK BOUNDARY	N/A	0.00	0.75	0.75	6	0	GR	
0464	NC	104144		MUIR BEACH COASTAL FIRE ROAD	FROM PACIFIC WAY ROAD TO INTERSECTION WITH COASTAL TRAIL	N/A	0.00	0.50	0.50	6	0	GR	
<b>0465</b>	<b>5</b>	<b>40737</b>		<b>OLD BUNKER ROAD</b>	<b>FROM END OF ROUTE 0105 (BUNKER ROAD) TO DEAD END AT COASTAL TRAIL</b>	<b>FORT CRONKHITE</b>	<b>0.97</b>	<b>0.00</b>	<b>0.97</b>	<b>6</b>	<b>87,067</b>	<b>AS</b>	<b>3</b>
0466	NC	41952		HAWK CAMP FIRE ROAD	FROM BOBCAT TRAIL TO HAWK CAMP	N/A	0.00	0.50	0.50	6	0	NV	
0467	NC	40740		RODEO AVENUE TRAIL FIRE ROAD	FROM RODEO AVENUE EXIT (U.S 101) TO ALTA TRAIL	N/A	0.00	0.70	0.70	6	0	NV	
0468	NC	41953		JULIAN ROAD	FROM ROUTE 0105 (BUNKER ROAD) TO ROUTE 0107 (MCCULLOUGH ROAD)	FORT BARRY	0.00	0.68	0.68	6	0	NV	
0501	4	38333		MACARTHUR AVENUE LOOP EAST (FORT MASON)	FROM ROUTE 0606 (FRANKLIN STREET) AT MP 0.10 TO ROUTE 0606 (FRANKLIN STREET)	SAN FRANCISCO	0.27	0.00	0.27	8	0	AS	6
0502A	4	38391		ROAD FROM GUARDHOUSE TO TOP OF ISLAND	FROM DOCK TO ROUTE 0977E (ALCATRAZ ISLAND MACHINE SHOP PARKING) AND ROUTE 0502B (ROAD FROM WHARF TO NW END OF ISLAND)	ALCATRAZ ISLAND	0.15	0.00	0.15	5	28,188	CO	5
0502B	4	38392		ROAD FROM WHARF TO NW END OF ISLAND	FROM ROUTE 0977E (ALCATRAZ ISLAND MACHINE SHOP PARKING) AND ROUTE 0502A (ROAD FROM GUARDHOUSE TO TOP OF ISLAND)	ALCATRAZ ISLAND	0.15	0.00	0.15	5	46,703	CO	5

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Road Inventory Program 05/05/2011

(Numerical By Route #)

Page 6 of 15

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0503	4	103914		ALCATRAZ ISLAND MILITARY MORGUE ROAD	FROM ROUTE 0502B (ROAD FROM WHARF TO NW END OF ISLAND) TO END	ALCATRAZ ISLAND	0.09	0.00	0.09	6	10,096	CO	5
0504	4	103915		ALCATRAZ ISLAND CLIFFSIDE ROAD	FROM ROUTE 0502B (ROAD FROM WHARF TO NW END OF ISLAND) TO END AT PARADE GROUND AREA (SW SIDE)	ALCATRAZ ISLAND	0.04	0.00	0.04	6	4,774	CO	5
0505	4	103916		ALCATRAZ ISLAND RECREATION YARD BOULEVARD	FROM ROUTE 0502B (ROAD FROM WHARF TO NW END OF ISLAND) TO END AT METAL DETECTOR BUILDING	ALCATRAZ ISLAND	0.04	0.00	0.04	6	2,198	CO	5
0506	4	103917		ALCATRAZ ISLAND BARRACKS ROAD	FROM ROUTE 0502B (ROAD FROM WHARF TO NW END OF ISLAND) TO END AT PARADE GROUND AREA (NE SIDE)	ALCATRAZ ISLAND	0.05	0.00	0.05	6	4,227	CO	5
0600	4	79913		MACARTHUR AVENUE LOOP WEST (FORT MASON)	FROM ROUTE 0910 (MACARTHUR AVENUE PARKING) TO END OF LOOP	SAN FRANCISCO	0.12	0.00	0.12	8	0	AS	6
0602A	4	79914		COLONEL'S ROW LOOP A (OUTSIDE LOOP) (FORT MASON)	FROM ROUTE 0910 (MACARTHUR AVENUE PARKING) TO END OF LOOP AT ROUTE 0910 (MACARTHUR AVENUE PARKING)	SAN FRANCISCO	0.29	0.00	0.29	8	0	AS	6
0602B	4	103905		COLONEL'S ROW LOOP B (INSIDE LOOP) (FORT MASON)	FROM ROUTE 0602A (COLONEL'S ROW LOOP A (OUTSIDE LOOP)) AT MP 0.11 TO ROUTE 0602A (COLONEL'S ROW LOOP A (OUTSIDE LOOP)) AT MP 0.15	SAN FRANCISCO	0.11	0.00	0.11	8	0	AS	6
0606	4	38331		FRANKLIN STREET (FORT MASON)	FROM BAY STREET TO ROUTE 0927 (FRANKLIN STREET END PARKING)	SAN FRANCISCO	0.23	0.00	0.23	8	0	AS	6
0608	4	79927		EDISON STREET	FROM ROUTE 0918 (RODEO BEACH PARKING) TO SECOND CROSSING OF ROUTE 0611 (HAGGET-GLASSBURN LOOP) AT MP 0.11	FORT CRONKHITE	0.20	0.00	0.20	5	0	AS	3
0610	4	79931		KIRKPATRICK STREET	FROM ROUTE 0105 (BUNKER ROAD) AT MP 3.66 TO ROUTE 0918 (RODEO BEACH PARKING)	FORT CRONKHITE	0.39	0.00	0.39	5	0	AS	3
<b>0611</b>	<b>5</b>	<b>79932</b>		<b>HAGGET-GLASSBURN LOOP</b>	<b>FROM ROUTE 0104 (MITCHELL ROAD) EAST AT MP 0.21 TO ROUTE 0104 (MITCHELL ROAD) WEST AT MP 0.27</b>	<b>FORT CRONKHITE</b>	<b>0.14</b>	<b>0.00</b>	<b>0.14</b>	<b>2</b>	<b>0</b>	<b>AS</b>	<b>3</b>
0900	4	38080		FORT FUNSTON PARKING (SOUTH)	FROM GREAT HIGHWAY AT JOHN MUIR DRIVE TO ROUTE 0901 (FORT FUNSTON PARKING (NORTH))	SAN FRANCISCO	0.00	0.00	0.00		58,010	AS	8
0901	4	38079		FORT FUNSTON PARKING (NORTH)	FROM ROUTE 0900 (FORT FUNSTON PARKING (SOUTH)) TO PARKING	SAN FRANCISCO	0.00	0.00	0.00		101,333	AS	8
0902	4	38093		OCEAN BEACH PARKING (SOUTH)	FROM GREAT HIGHWAY AT WATER TREATMENT PLANT TO GREAT HIGHWAY	SAN FRANCISCO	0.00	0.00	0.00		34,871	AS	8

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## GOGA

### GOLDEN GATE NATIONAL RECREATION AREA

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0903	4	38092		OCEAN BEACH PARKING (NORTH)	FROM GREAT HIGHWAY AT SLOAT BOULEVARD TO GREAT HIGHWAY	SAN FRANCISCO	0.00	0.00	0.00		42,244	AS	8
0904	4	38107		SUTRO HEIGHTS PARK PARKING	FROM POINT LOBOS AVENUE TO POINT LOBOS AVENUE	SAN FRANCISCO	0.00	0.00	0.00		23,177	AS	7
<b>0905</b>	<b>5</b>	<b>38106</b>		<b>MERRIE WAY PARKING</b>	<b>FROM POINT LOBOS AVENUE TO PARKING</b>	<b>SAN FRANCISCO</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>70,105</b>	<b>AS</b>	<b>7</b>
0906	4	38141		LANDS END / SAN FRANCISCO MEMORIAL PARKING	ADJACENT TO CLEMENT STREET	SAN FRANCISCO	0.00	0.00	0.00		100,082	AS	7
0907	4	80078		CHINA BEACH PARKING	ADJACENT TO SEACLIFF ROAD	SAN FRANCISCO	0.00	0.00	0.00		27,143	AS	7
0908	4	80073		JOHN DALY BOULEVARD OVERLOOK PARKING	FROM JOHN DALY BOULEVARD TO PARKING	SAN FRANCISCO	0.00	0.00	0.00		25,871	AS	8
0910	4	80007		MACARTHUR AVENUE PARKING (FORT MASON)	FROM ROUTE 0600 (MACARTHUR AVENUE) WEST AT MP 0.0 TO ROUTE 0606 (FRANKLIN STREET) AT MP 0.1	SAN FRANCISCO	0.00	0.00	0.00		28,384	AS	6
0911	4	80006		OFFICERS CLUB DRIVE PARKING (FORT MASON)	FROM ROUTE 0501 (MACARTHUR AVENUE LOOP) EAST AT MP 0.1 TO PARKING	SAN FRANCISCO	0.00	0.00	0.00		4,967	AS	6
0912A	4	80004		POPE ROAD PARKING AREA A (FORT MASON)	ADJACENT TO ROUTE 0407 (POPE ROAD) AT MP 0.1	SAN FRANCISCO	0.00	0.00	0.00		2,165	CO	6
0912B	4	103908		POPE ROAD PARKING AREA B (FORT MASON)	ADJACENT TO ROUTE 0407 (POPE ROAD) AT MP 0.1	SAN FRANCISCO	0.00	0.00	0.00		1,635	AS	6
0913	4	80000		SHAFTER PARKING (FORT MASON)	FROM ROUTE 0407 (POPE ROAD) AT MP 0.1 TO ROUTE 0910 (MACARTHUR AVENUE PARKING)	SAN FRANCISCO	0.00	0.00	0.00		14,066	AS	6
0915	4	79997		PUMPHOUSE PARKING (FORT MASON)	ADJACENT TO ROUTE 0405 (MCDOWELL AVENUE) AT MP 0.1	SAN FRANCISCO	0.00	0.00	0.00		2,467	CO	6
0916	4	38292		UPPER FORT MASON (POLICE) PARKING (FORT MASON)	FROM ROUTE 0600 (MACARTHUR AVENUE LOOP) WEST AT MP 0.1 TO ROUTE 0602A (COLONEL'S ROW LOOP A (OUTSIDE LOOP) (FORT MASON)) AT MP 0.2	SAN FRANCISCO	0.00	0.00	0.00		39,835	AS	6
0917	4	38291		LOWER FORT MASON (PIER) PARKING (FORT MASON)	ADJACENT TO YACHT HARBOR PARKING AREA	SAN FRANCISCO	0.00	0.00	0.00		257,067	AS	6
0918	4	42062		RODEO BEACH PARKING	FROM ROUTE 0610 (KIRKPATRICK STREET) AT MP 0.2 TO ROUTE 0104 (MITCHELL ROAD) AT MP 0.4	FORT CRONKHITE	0.00	0.00	0.00		44,997	AS	3
0919A	4	79994		HEADLANDS INSTITUTE EAST	FROM ROUTE 0105 (BUNKER ROAD) 3.6 TO PARKING	FORT CRONKHITE	0.00	0.00	0.00		12,126	AS	3

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## GOGA

### GOLDEN GATE NATIONAL RECREATION AREA

Rte. No.	Cycle Collected	FMSS No.	Concess Route	Route Name	Route Description From To	Maint. District	Paved Miles	Un-Paved Miles	Total Route Length	Func. Class	Manual Rated SQ/FT	Surf. Type	Area Maps
0919B	4	79995		HEADLANDS INSTITUTE CENTRAL	FROM ROUTE 0611 (HAGGETT-GLASSBURN LOOP) AT MP 0.1 TO PARKING	FORT CRONKHITE	0.00	0.00	0.00		13,065	AS	3
0919CZZ	5	79996		HEADLANDS INSTITUTE WEST PARKING AREAS	ADJACENT TO ROUTE 0608 (EDISON STREET) ON LEFT AND RIGHT	FORT CRONKHITE	0.00	0.00	0.00		7,279	AS	3
0919D	4	103968		HEADLANDS INSTITUTE PARKING	ADJACENT TO ROUTE 0611 (HAGGETT-GLASSBURN LOOP) ON RIGHT AT MP 0.1	FORT CRONKHITE	0.00	0.00	0.00		1,360	AS	3
0920A	4	14444		STINSON BEACH NORTH PARKING	FROM ROUTE 0205 (STINSON BEACH ACCESS ROAD) AT MP 0.1 TO PARKING	STINSON BEACH	0.00	0.00	0.00		69,595	AS	1
0920B	4	14440		STINSON BEACH CENTRAL PARKING	FROM ROUTE 0205 (STINSON BEACH ACCESS ROAD) AT MP 0.16 TO ROUTE 0205 (STINSON BEACH ACCESS ROAD) AT MP 0.24	STINSON BEACH	0.00	0.00	0.00		60,311	AS	1
0920C	4	80138		STINSON BEACH ADMINISTRATION PARKING	FROM ROUTE 0441 (STINSON BEACH ADMINISTRATION ROAD) AT MP 0.1 TO PARKING	STINSON BEACH	0.00	0.00	0.00		8,705	AS	1
0920D	NC	14437		STINSON BEACH SOUTH PARKING	FROM END OF ROUTE 0205 (STINSON BEACH ACCESS ROAD) TO PARKING	STINSON BEACH	0.00	0.00	0.00		0	NV	
0921	4	79992		BUILDING 7E PARKING (FORT MASON)	FROM ROUTE 0606 (FRANKLIN STREET) AT MP 0.1 TO PARKING	SAN FRANCISCO	0.00	0.00	0.00		2,865	AS	6
0922	4	79991		MACARTHUR AVENUE LOOP EAST PARKING (QUAD) (FORT MASON)	FROM ROUTE 0501 (MACARTHUR AVENUE LOOP) EAST AT MP 0.2 TO ROUTE 0501 (MACARTHUR AVENUE LOOP)	SAN FRANCISCO	0.00	0.00	0.00		37,638	AS	6
0923	4	104147		FORT MILEY ADMINISTRATION PARKING	FROM ROUTE 0402 (FORT MILEY EAST ROAD) AT MP 0.0 TO ROUTE 0402 (FORT MILEY EAST ROAD) AT MP 0.1	FORT MILEY	0.00	0.00	0.00		15,564	AS	7
0924	NC	43399		MIWOK STABLE AREA PARKING	FROM ROUTE 0410 (TENNESSEE VALLEY ROAD) TO END AT STABLES	TENNESSEE VALLEY	0.00	0.00	0.00		0	GR	
0925	NC	103969		FIRE HOUSE PARKING	ADJACENT TO ROUTE 0611 (HAGGETT-GLASSBURN LOOP)	FORT CRONKHITE	0.00	0.00	0.00		0	GR	
0926	4	79988		FORT CRONKHITE MAINTENANCE PARKING	FROM ROUTE 0105 (BUNKER ROAD) AT MP 3.77 TO ROUTE 0931 (MARINE MAMMAL RESCUE CENTER PARKING)	FORT CRONKHITE	0.00	0.00	0.00		31,676	AS	3

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### GOLDEN GATE NATIONAL RECREATION AREA

Rte. No.	Cycle Collected	FMSS No.	Concess Route	Route Name	Route Description From To	Maint. District	Paved Miles	Un-Paved Miles	Total Route Length	Func. Class	Manual Rated SQ/FT	Surf. Type	Area Maps
0927	4	79985		FRANKLIN STREET END PARKING (FORT MASON)	FROM END OF ROUTE 0606 (FRANKLIN STREET) AT MP 2.3 TO PARKING	SAN FRANCISCO	0.00	0.00	0.00		2,989	AS	6
0928	4	79981		GOLF CART ACCESS PARKING	ADJACENT TO GOLF COURSE CART PATH	FORT MILEY	0.00	0.00	0.00		1,530	AS	7
0929	4	79979		FUNSTON STREET PARKING (FORT MASON)	ADJACENT TO ROUTE 0448	SAN FRANCISCO	0.00	0.00	0.00		1,261	AS	6
0930	4	79973		BLACK POINT BATTERY PARKING (FORT MASON)	FROM ROUTE 0405 (MCDOWELL AVENUE) AT MP 0.1 TO PARKING	SAN FRANCISCO	0.00	0.00	0.00		8,165	AS	6
0931	4	79969		MARINE MAMMAL RESCUE CENTER PARKING	FROM ROUTE 0105 (BUNKER ROAD) AT MP 3.75 TO PARKING	FORT CRONKHITE	0.00	0.00	0.00		53,913	AS	3
0932	4	79966		BAKER-BARRY TUNNEL PARKING	FROM ROUTE 0105 (BUNKER ROAD) AT MP 0.6 TO PARKING	FORT BAKER	0.00	0.00	0.00		10,582	AS	4
0933	4	79959		BAY AREA DISCOVERY MUSEUM PARKING	FROM ROUTE 0418 (EAST ROAD) TO ROUTE 0996 (BAY AREA DISCOVERY MUSEUM PARKING)	FORT BAKER	0.00	0.00	0.00		44,088	AS	4
0938A	4	80127		BUILDING 405 PARKING AREA A	ADJACENT TO ROUTE 0105 (BUNKER ROAD) AT MP 0.1 ON LEFT	FORT BAKER	0.00	0.00	0.00		3,776	AS	4
0938B	4	105857		BUILDING 405 PARKING AREA B	ADJACENT TO ROUTE 0105 (BUNKER ROAD) AT MP 0.1 ON RIGHT	FORT BAKER	0.00	0.00	0.00		2,448	AS	4
0939	4	80123		BUILDING 407 PARKING	ADJACENT TO ROUTE 0105 (BUNKER ROAD) AT MP 0.0 AND ROUTE 0417 (MURRAY CIRCLE) AT MP 0.6	FORT BAKER	0.00	0.00	0.00		1,564	AS	4
0940	4	80125		BUILDING 670 PARKING	FROM ROUTE 0417 (MURRAY CIRCLE) AT MP 0.1 TO ROUTE 0425 (SOMMERVILLE ROAD) AT MP 0.1	FORT BAKER	0.00	0.00	0.00		15,317	AS	4
0941	4	80126		BUILDING 511 PARKING	FROM ROUTE 0418 (EAST ROAD) AT MP 0.9 TO ROUTE 0946 (BUILDING 507 PARKING)	FORT BAKER	0.00	0.00	0.00		24,583	AS	4
0942A	4	80121		MCREYNOLDS PARKING AREA A	ADJACENT TO ROUTE 0420 (MCREYNOLDS ROAD) AT MP 0.2	FORT BAKER	0.00	0.00	0.00		1,811	AS	4
0942B	4	103909		MCREYNOLDS PARKING AREA B	ADJACENT TO ROUTE 0420 (MCREYNOLDS ROAD) AT MP 0.2	FORT BAKER	0.00	0.00	0.00		1,574	AS	4

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0942C	4	103910		MCREYNOLDS PARKING AREA C	ADJACENT TO ROUTE 0420 (MCREYNOLDS ROAD) AT MP 0.3	FORT BAKER	0.00	0.00	0.00		2,881	AS	4
0942D	4	103911		MCREYNOLDS PARKING AREA D	ADJACENT TO ROUTE 0420 (MCREYNOLDS ROAD) AT MP 0.3	FORT BAKER	0.00	0.00	0.00		1,890	AS	4
0942E	4	103912		MCREYNOLDS PARKING AREA E	ADJACENT TO ROUTE 0420 (MCREYNOLDS ROAD) AT MP 0.3	FORT BAKER	0.00	0.00	0.00		3,210	AS	4
0942F	4	103913		MCREYNOLDS PARKING AREA F	FROM ROUTE 0417 (MURRAY CIRCLE) AT MP 0.2 TO ROUTE 0420 (MCREYNOLDS ROAD) AT MP 0.4	FORT BAKER	0.00	0.00	0.00		2,950	AS	4
0943	4	80115		BUILDING 519 PARKING	FROM ROUTE 0421 (SEITLER STREET) AT MP 0.3 TO ROUTE 0421 (SEITLER STREET)	FORT BAKER	0.00	0.00	0.00		3,751	AS	4
0944	4	80105		UMIA PARKING	FROM ROUTE 0420 (MCREYNOLDS ROAD) AT MP 0.2 TO PARKING	FORT BAKER	0.00	0.00	0.00		6,127	AS	4
0945	4	80107		BUILDING 533 PARKING	FROM END OF ROUTE 0422 (KOBBER STREET) AT MP 0.1 TO PARKING	FORT BAKER	0.00	0.00	0.00		10,866	AS	4
0946	4	80110		BUILDING 507 PARKING	FROM ROUTE 0420 (MCREYNOLDS ROAD) AT MP 0.4 TO ROUTE 0941 (BUILDING 511 PARKING)	FORT BAKER	0.00	0.00	0.00		10,582	AS	4
0947	4	80101		NIKE MISSILE SITE	FROM ROUTE 0108 (FIELD ROAD) AT MP 0.4 TO PARKING	FORT BARRY	0.00	0.00	0.00		84,644	AS	3
0948	4	80099		PARK SERVICE EMPLOYEE HOUSING	FROM ROUTE 0109 (CONZELMAN ROAD) AT MP 4.7 TO PARKING	FORT BARRY	0.00	0.00	0.00		16,625	AS	3
0949	4	40838		YMCA PARKING	FROM ROUTE 0108 (FIELD ROAD) AT MP 0.9 TO ROUTE 0108 (FIELD ROAD) AT MP 1.0	FORT BARRY	0.00	0.00	0.00		33,898	AS	3
0950	4	80093		MARIN HEADLANDS VISITOR CENTER PARKING	FROM ROUTE 0108 (FIELD ROAD) AT MP 0.1 TO ROUTE 0108 (FIELD ROAD) AT MP 0.2	FORT BARRY	0.00	0.00	0.00		14,641	AS	3
0951	4	80087		MENGES PARKING	FROM ROUTE 0105 (BUNKER ROAD) AT MP 1.7 TO PARKING	FORT BARRY	0.00	0.00	0.00		5,911	AS	4
0952	4	79953		BOTTOMS DRIVE PARKING	FROM ROUTE 0105 (BUNKER ROAD) AT MP 1.6 TO PARKING	FORT BARRY	0.00	0.00	0.00		6,056	AS	4
0953	NC	103919		BATTERY MENDELL PARKING	ADJACENT TO ROUTE 0432 (MENDELL ROAD)	FORT BARRY	0.00	0.00	0.00		0	GR	

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0954	NC	103970		BIRD ROCK OVERLOOK	FROM END OF ROUTE 0432 (MENDELL ROAD) TO PARKING	FORT BARRY	0.00	0.00	0.00		0	GR	
0955	NC	103971		THREE SISTERS PARKING	ADJACENT TO ROUTE 0108 (FIELD ROAD) ON LEFT AND RIGHT	FORT BARRY	0.00	0.00	0.00		0	GR	
0956	4	79990		TOWNSLEY RESERVE PARKING	FROM ROUTE 0465 (OLD BUNKER ROAD) TO PARKING	FORT CRONKHITE	0.00	0.00	0.00		10,964	AS	3
0957ZZ	4	79952		FORT MILEY WEST PARKING AREAS	ADJACENT TO ROUTE 0401 (FORT MILEY WEST ACCESS ROAD) AT MP 0.1	FORT MILEY	0.00	0.00	0.00		9,327	AS	7
0958	4	79950		MILAGRA RIDGE PARKING	FROM ROUTE 0404 (MILAGRA RIDGE) AT MP 0.7 TO PARKING	SAN MATEO	0.00	0.00	0.00		6,330	AS	9
0959	4	79948		SWEENEY RIDGE PARKING	FROM END OF ROUTE 0406 (SWEENEY RIDGE ROAD) AT MP 2.3 TO PARKING	SAN MATEO	0.00	0.00	0.00		12,707	AS	9
0963	4	103918		OFFICERS CLUB PARKING (FORT MASON)	ADJACENT TO ROUTE 0501 (MACARTHUR AVENUE LOOP EAST) AT MP 0.1	SAN FRANCISCO	0.00	0.00	0.00		10,196	AS	6
0967	4	104002		SWEENEY RIDGE PARKING AREA	ADJACENT TO SNEATH ROAD, JUST BEFORE ROUTE 0406 (SWEENEY RIDGE ROAD) BEGINS	SAN MATEO	0.00	0.00	0.00		2,258	AS	9
0973	4	104005		FORT BAKER MAINTENANCE STORAGE PARKING	FROM ROUTE 0105 (BUNKER ROAD) BEHIND BUILDING #407 AT MP 0.0 TO ROUTE 0105 (BUNKER ROAD) AT MP 0.1	FORT BAKER	0.00	0.00	0.00		16,721	AS	4
0974	4	104006		FORT BAKER PIER PARKING	ADJACENT TO ROUTE 0109 (CONZELMAN ROAD) AT FISHING PIER AT MP 0.1	FORT BAKER	0.00	0.00	0.00		1,979	AS	4
0975	4	89875		LOWER CONZELMAN ROAD COMMUTER/TRAILHEAD PARKING	ADJACENT TO ROUTE 0109 (CONZELMAN ROAD) AT INTERSECTION WITH SAUSALITO LATERAL CONNECTOR ROAD AT MP 0.7	FORT BAKER	0.00	0.00	0.00		20,481	AS	4
0976	4	104007		GREENHOUSE PARKING	FROM ROUTE 0610 (KIRKPATRICK STREET) BEHIND BUILDING #1042 AT FORT CRONKHITE AT MP 0.2 TO PARKING	FORT CRONKHITE	0.00	0.00	0.00		5,820	AS	3



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Shading Color Key:

Red text denotes approx. mileage

White = Paved Routes, DCV Driven

Yellow = Unpaved Routes, DCV not Driven

Blue = All Paved Parking Areas

Green = All Unpaved Parking Areas

Grey = Paved Routes, DCV not Driven

Black = State, Local or Private non-NPS Routes

■ = Concession Route Flag ON

\*Unpaved route data was obtained from NPS and was not inventoried by the Road Inventory Program (RIP).

\*\* DCV - Data Collection Vehicle

NC - Not Collected

\*\*\* Only Functional Class 1, 2, & 7 routes, and previously uncollected routes were collected in Cycle 5

## GOGA

### GOLDEN GATE NATIONAL RECREATION AREA

Rte. No.	Cycle Collected	FMSS No.	Concess Route	Route Name	Route Description From To	Maint. District	Paved Miles	Un-Paved Miles	Total Route Length	Func. Class	Manual Rated SQ/FT	Surf. Type	Area Maps
0977C	4	104009		ALCATRAZ ISLAND STORE HOUSE PARKING	ADJACENT TO ROUTE 0502A (ROAD FROM GUARDHOUSE TO TOP OF ISLAND)	ALCATRAZ ISLAND	0.00	0.00	0.00		3,752	CO	5
0977D	4	104010		ALCATRAZ ISLAND POWER PLANT PARKING	ADJACENT TO ROUTE 0502A (ROAD FROM GUARDHOUSE TO TOP OF ISLAND)	ALCATRAZ ISLAND	0.00	0.00	0.00		834	CO	5
0977E	4	104011		ALCATRAZ ISLAND MACHINE SHOP PARKING	ADJACENT TO ROUTE 0502A (ROAD FROM GUARDHOUSE TO TOP OF ISLAND)	ALCATRAZ ISLAND	0.00	0.00	0.00		15,016	CO	5
0977G	4	103998		ALCATRAZ ISLAND BOOK STORE AND CHAPEL PARKING	ADJACENT TO ROUTE 0502B (ROAD FROM WHARF TO NW END OF ISLAND)	ALCATRAZ ISLAND	0.00	0.00	0.00		3,872	CO	5
0978ZZ	4	108265		FORT MILEY EAST BONEYARDS	FROM ROUTE 0402 (FORT MILEY EAST ROAD) TO PARKING	FORT MILEY	0.00	0.00	0.00		19,860	CO	7
0979	4	92092		POINT BONITA PARKING	ADJACENT TO ROUTE 0108 (FIELD ROAD) AT MP 1.1	FORT BARRY	0.00	0.00	0.00		557	AS	3
0980	4	40835		PARKING LOT, HILL 129	ADJACENT TO ROUTE 0109 (CONZELMAN ROAD) AT MP 2.5	FORT BARRY	0.00	0.00	0.00		14,365	AS	4
0985	4	108264		BUILDING 112 PARKING AREA	FROM ROUTE 0916 (UPPER FORT MASON (POLICE) PARKING) TO PARKING	SAN FRANCISCO	0.00	0.00	0.00		5,357	AS	6
0986	NC	80847		BATTERY SPENCER PARKING AREA	ADJACENT TO ROUTE 0109 (CONZELMAN ROAD)	FORT BARRY	0.00	0.00	0.00		0	GR	
0988	4	-1		MILAGRA RIDGE OVERLOOK PARKING	FROM END OF ROUTE 0404 (MILAGRA RIDGE ROAD) AT MP 0.9 TO PARKING	SAN MATEO	0.00	0.00	0.00		1,471	AS	9
0989	NC	40837		UPPER FISHERMANS PARKING AREA	ADJACENT TO ROUTE 0109 (CONZELMAN ROAD)	MARIN HEADLANDS	0.00	0.00	0.00		0	GR	
0990	NC	40836		LOWER FISHERMANS PARKING AREA	ADJACENT TO ROUTE 0109 (CONZELMAN ROAD)	MARIN HEADLANDS	0.00	0.00	0.00		0	GR	
0991	NC	40834		BATTERY ALEXANDER PARKING AREA	FROM ROUTE 0108 (FIELD ROAD) TO ROUTE 0108 (FIELD ROAD)	FORT BARRY	0.00	0.00	0.00		24,180	GR	
0993	NC	43397		TENNESSEE VALLEY PARKING AREA	ADJACENT TO ROUTE 0410 (TENNESSEE VALLEY ROAD)	TENNESSEE VALLEY	0.00	0.00	0.00		11,067	GR	

# Cycle 5 NPS/RIP Route ID Report

Shading Color Key:

Red text denotes  
approx. mileage

White = Paved Routes, DCV Driven
Grey = Paved Routes, DCV not Driven

Yellow = Unpaved Routes, DCV not Driven
Black = State, Local or Private non-NPS Routes

Blue = All Paved Parking Areas
Red = Concession Route Flag ON

Green = All Unpaved Parking Areas
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\*Unpaved route data was obtained from NPS and was not inventoried by the Road Inventory Program (RIP).

\*\* DCV - Data Collection Vehicle

NC - Not Collected

\*\*\* Only Functional Class 1, 2, & 7 routes, and previously uncollected routes were collected in Cycle 5

## GOGA

### GOLDEN GATE NATIONAL RECREATION AREA

Rte. No.	Cycle Collected	FMSS No.	Concess Route	Route Name	Route Description From To	Maint. District	Paved Miles	Un-Paved Miles	Total Route Length	Func. Class	Manual Rated SQ/FT	Surf. Type	Area Maps
0994	NC	43428		MUIR BEACH PARKING	ADJACENT TO SHORELINE HIGHWAY 1	MUIR WOODS	0.00	0.00	0.00		55,660	GR	
0995	4	43429		MUIR BEACH OVERLOOK	FROM SEACAPE DRIVE TO PARKING	MUIR WOODS	0.00	0.00	0.00		16,240	AS	2
0996	5	-1		BAY AREA DISCOVERY MUSEUM PARKING AREA	FROM ROUTE 0417 (MURRAY CIRCLE) TO PARKING	FORT BAKER	0.00	0.00	0.00		55,795	AS	4
5000	4			MUIR WOODS ROAD	FROM MUWO ROUTE 0900 (MUIR WOODS PARKING) AT HEADQUARTERS TO SHORELINE HIGHWAY 1	MUIR WOODS	2.40	0.00	2.40		0	AS	2
5410	4			TENNESSEE VALLEY ROAD	FROM PARK BOUNDARY SOUTH SIDE TO ROUTE 0410 (TENNESSEE VALLEY ROAD) AT MP 0.0	TENNESSEE VALLEY	0.70	0.00	0.70		0	AS	3

# Cycle 5 NPS/RIP Route ID Report

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Yellow = Unpaved Routes, DCV not Driven

Blue = All Paved Parking Areas

Green = All Unpaved Parking Areas

Grey = Paved Routes, DCV not Driven

Black = State, Local or Private non-NPS Routes

■ = Concession Route Flag ON

\*Unpaved route data was obtained from NPS and was not inventoried by the Road Inventory Program (RIP).

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NC - Not Collected

\*\*\* Only Functional Class 1, 2, & 7 routes, and previously uncollected routes were collected in Cycle 5

## CYCLE 5 COLLECTED SUMMARY TOTALS FOR GOLDEN GATE NATIONAL RECREATION AREA

### CYCLE 5 COLLECTED ROUTE TOTALS

DCV Driven Route Miles	13.00
Manually Rated Route Miles	0.97
<b>TOTAL PARK ROUTE MILES COLLECTED IN CYCLE 5</b>	<b>13.97</b>
Manually Rated Routes (SQFT)	87,067

### \* CYCLE 5 COLLECTED PARKING AREA TOTALS

Paved Parking (SQFT)	133,179
----------------------	---------

### CYCLE 5 COLLECTED CONCESSION TOTALS

Concession Paved Route Miles	0.00
Concession Paved Parking Area SQFT	0
Concession Manually Rated Routes SQFT	0

### CYCLE 5 COLLECTED WEIGHTED AVERAGE PARK VALUES

DCV Driven PCR	53
**Manually Rated Routes PCR	45
**Parking PCR	91
***Total Equivalent Lane Miles	30.45

## TOTAL PARK SUMMARY FOR GOLDEN GATE NATIONAL RECREATION AREA

### ROUTE TOTALS

TOTAL PAVED PARK ROUTE MILES IN THE ENTIRE PARK	30.93
TOTAL PAVED PARKING (SQFT)	1,786,604

\* - The Parking Area Totals SQFT value represents all parking areas collected in Cycle 5, both park and concessionaire.

\*\* - Parking and Manually Rated Routes are assigned the following PCR values based on their observed condition: Construction=-1, Excellent=97, Good=90, Fair=73, and Poor=45.

\*\*\* - Equivalent Lane Miles are calculated by route using the following equations : DCV and Manually Rated Lines Routes=(PAVE\_WIDTHxPAVED\_MI)/11 foot lane. Parking Areas=SQ\_FEET/5280/11. Manually Rated Polygons=SQ\_FEET/5280/11.

# Cycle 5 NPS/RIP Route ID Report

Shading Color Key:

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White = Paved Routes, DCV Driven

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Blue = All Paved Parking Areas

Green = All Unpaved Parking Areas

Grey = Paved Routes, DCV not Driven

Black = State, Local or Private non-NPS Routes

= Concession Route Flag ON

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NC - Not Collected

\*\*\* Only Functional Class 1, 2, & 7 routes, and previously uncollected routes were collected in Cycle 5

## General Park Road Functional Classification Table

- Class 1** Principal Park Road/Rural Parkway (Public Roads) Roads which constitute the main access route, circulatory tour, or thoroughfare for park visitors. Route Numbers 1 - 99. Note: Rural parkways (e.g. Natchez Trace) are numbered 1 - 9. State Routes Inventoried for Park. Route Numbers 5000-5999
- Class 2** Connector Park Road (Public Roads) - Roads which provide access within a park to areas of scenic, scientific, recreational or cultural interest, such as overlooks, campgrounds, etc. Route Numbers 100-199.
- Class 3** Special Purpose Park Road (Public Roads) - Roads which provide circulation within public areas, such as campgrounds, picnic areas, visitor center complexes, concessionaire facilities, etc. These roads generally serve low-speed traffic and are often designed for one-way circulation. Route Numbers 200-299.
- Class 4** Primitive Park Roads (Public Roads) - Roads which provide circulation through remote areas and/or access to primitive campgrounds and undeveloped areas. These roads frequently have no minimum design standards and their use may be limited to specially equipped vehicles. Route Numbers 200-299. Note: Functional Classes 3 and 4 have the same route numbers because, historically, they were numbered similarly.
- Class 5** Administrative Access Road (Administrative Roads) - All public roads intended for access to administrative developments or structures such as park offices, employee quarters, or utility areas. Route Numbers 400-499.
- Class 6** Restricted Road (Administrative Roads) - All roads normally closed to the public, including patrol roads, truck trails, and other similar roads. Route Numbers 400-499. Note: Functional Classes 5 and 6 have the same route numbers because historically they were numbered similarly and often there is little distinction between these routes. For example, because utility areas and employee housing are often closed to the public, this restriction would result in classification of FC 6 rather than FC 5.
- Class 7** Urban Parkway (Urban Parkways and City Streets) - These facilities serve high volumes of park and non-park related traffic and are restricted, limited-access facilities in an urban area. This category of roads primarily encompasses the major parkways which serve as gateways to our nation's capital. Other major park roads or portions thereof, however, may be included in this category. Route Numbers 1-9.
- Class 8** City Streets (Urban Parkways and City Streets) - City streets are usually extensions of the adjoining street system that are owned and maintained by the National Park Service. The construction and/or reconstruction should conform with accepted local engineering practice and local conditions. Route Numbers 600-699.

\*\*\*\*\*

A park road system contains those roads within or giving access to a park or other unit of the NPS which are administered by the NPS, or by the Service in cooperation with other agencies. The assignment of a functional classification (FC) to a park road is not based on traffic volumes or design speed, but on the intended use or function of that road or route.

The historic route numbering system also included a 300 number series for interpretive roads, and a 500 series for one-way roads. There are approximately 250 roads nationwide which are designated by the 300 and 500 series. The numbers for these roads will be maintained for reporting consistency. However, since these interpretive and one-way routes are not as clearly tied to a specific functional class, the 300 and 500 series will be discontinued for future use.

5000 route numbers are assigned to Non-NPS Routes that are State, County or City owned which border, traverse, or provide access to Park Facilities or Assets. 5000 Routes are driven for GPS and Video Log only.

## Surface Type Abbreviations:

- AS - Asphaltic Concrete Pavement**
- CO - Portland Cement Concrete Pavement**
- BR - Brick or Pavers Road Bed**
- CB - Cobble Stone Road Bed**
- GR - Gravel Road Bed**
- SA - Sand Road Bed**
- NV - Native or Dirt Material Road Bed**
- OT - Other Materials Road Bed**

# NPS/RIP Subcomponent Details for GOGA

Shading Color Key:

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White = Paved Routes, DCV Driven

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Blue = All Paved Parking Areas

Green = All Unpaved Parking Areas

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■ = Concession Route Flag ON

\*Unpaved route data was obtained from NPS and was not inventoried by the Road Inventory Program (RIP).

## GOGA

### GOLDEN GATE NATIONAL RECREATION AREA

#### Asset Entered in FMSS System

Rte. No.	FMSS No.	Cycle Collected	Route Name	From	To	Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
0919CZZ	79996	5	HEADLANDS INSTITUTE WEST PARKING AREAS	ADJACENT TO ROUTE 0608 (EDISON STREET) ON LEFT AND RIGHT				0.00	0.00	0.00	7,279
0957ZZ	79952	4	FORT MILEY WEST PARKING AREAS	ADJACENT TO ROUTE 0401 (FORT MILEY WEST ACCESS ROAD) AT MP 0.1				0.00	0.00	0.00	9,327
0978ZZ	108265	4	FORT MILEY EAST BONEYARDS	FROM ROUTE 0402 (FORT MILEY EAST ROAD)	TO PARKING			0.00	0.00	0.00	19,860

#### Asset GOGA-0919CZZ Subcomponent Breakdown

Rte. No.	FMSS No.	Cycle Collected	Route Name	From	To	Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
0919CAZ	79996	5	HEADLANDS INSTITUTE WEST PARKING A	ADJACENT TO ROUTE 0608 (EDISON STREET) ON RIGHT				0.00	0.00	0.00	3,548
0919CBZ	79996	5	HEADLANDS INSTITUTE WEST PARKING B	ADJACENT TO ROUTE 0608 (EDISON STREET) ON LEFT				0.00	0.00	0.00	3,731

#### Asset GOGA-0957ZZ Subcomponent Breakdown

Rte. No.	FMSS No.	Cycle Collected	Route Name	From	To	Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
0957AZ	79952	4	FORT MILEY WEST PARKING A	ADJACENT TO ROUTE 0401 (FORT MILEY WEST ACCESS ROAD) AT MP 0.1 ON RIGHT				0.00	0.00	0.00	2,440
0957BZ	79952	4	FORT MILEY WEST PARKING B	ADJACENT TO ROUTE 0401 (FORT MILEY WEST ACCESS ROAD) AT MP 0.1 ON LEFT				0.00	0.00	0.00	1,169
0957CZ	79952	4	FORT MILEY WEST PARKING C	ADJACENT TO ROUTE 0401 (FORT MILEY WEST ACCESS ROAD) AT MP 0.1 ON RIGHT				0.00	0.00	0.00	1,945
0957DZ	79952	4	FORT MILEY WEST PARKING D	FROM ROUTE 0401 (FORT MILEY WEST ACCESS ROAD) AT MP 0.1	TO PARKING			0.00	0.00	0.00	3,773

# NPS/RIP Subcomponent Details for GOGA

Road Inventory Program 05/05/2011

(Numerical By Subcomponent #)

Page 2 of 2

Shading Color Key:

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Yellow = Unpaved Routes, DCV not Driven

Blue = All Paved Parking Areas

Green = All Unpaved Parking Areas

Grey = Paved Routes, DCV not Driven

Black = State, Local or Private non-NPS Routes

■ = Concession Route Flag ON

\*Unpaved route data was obtained from NPS and was not inventoried by the Road Inventory Program (RIP).

## GOGA

### GOLDEN GATE NATIONAL RECREATION AREA

#### Asset GOGA-0978ZZ Subcomponent Breakdown

Rte. No.	FMSS No.	Cycle Collected	Route Description			Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
			Route Name	From	To						
0978AZ	108265	4	FORT MILEY EAST BONEYARD A	FROM ROUTE 0402 (FORT MILEY EAST ROAD) AT MP 0.11	TO PARKING			0.00	0.00	0.00	12,366
0978BZ	108265	4	FORT MILEY EAST BONEYARD B	FROM ROUTE 0402 (FORT MILEY EAST ROAD) AT MP 0.19	TO PARKING			0.00	0.00	0.00	3,428
0978CZ	108265	4	FORT MILEY EAST BONEYARD C	FROM ROUTE 0402 (FORT MILEY EAST ROAD) AT MP 0.22	TO PARKING			0.00	0.00	0.00	4,066

**ROUTES ADDED FROM PREVIOUS INVENTORY:**

Route #	Route Name	Reason for Addition	Comments
0465	Old Bunker Road	Other	Added to the inventory during Cycle 5. Part of this road was not collected before, and the begin section was acquired from the end of what was previously Route 0105 in Cycle 4.
0995	Muir Beach Overlook	Other	Ownership changed from MUWO to GOGA. Route was MUWO-0922 in Cycle 4.
0996	Bay Area Discovery Museum Parking Area	Recently constructed route	Parking 0934 and 0936 were located in this area in Cycle 4 but after reconstruction the new parking area is now Route 0996

**ROUTES MODIFIED FROM PREVIOUS INVENTORY:**

Route #	Route Name	Type of Modication	Comments
0105	Bunker Road	Geometry/Length change	Route ending changed (shortened) due to washed out section of roadway, and change of this section and beyond to NONPUBLIC. Route 0465 is the new route added to the inventory
0418	East Road	Route number/Functional class change	Functional Class changed from 3 to 2
0905	Merrie Way Parking	Geometry/Length change	Route was reconstructed
0919CZZ	Headlands Institute West Parking Areas	Collection method change	Route 0919C was removed in Cycle 4 to be driven by the data collection vehicle, and was instead collected as part of Route 0608 in Cycle 4. In Cycle 5, 0919CAZ and 0919CBZ were added in as the two parking sections adjacent to and on either side of Route 0608



ROUTES REMOVED FROM PREVIOUS INVENTORY:			
Route #	Route Name	Reason for Removal	Comments
0110	Long Avenue	Other	Ownership change from GOGA to FOPO
0445	Battery East Road	Other	Ownership change from GOGA to FOPO
0601	Marine Drive	Other	Ownership change from GOGA to FOPO
0612	Merchant Drive	Other	Ownership change from GOGA to PRES
0613	Battery Chamberlin / North Baker Beach Road	Other	Ownership change from GOGA to PRES
0934	Building 637 Parking	Closed/Abandoned	Area was reconstructed. Route 0996 is the newly constructed route
0935	Building 637 Annex Parking	Closed/Abandoned	Area was reconstructed and removed.
0936	Breitung Parking	Closed/Abandoned	Area was reconstructed. Route 0996 is the newly constructed route
0937	Building 640 Parking	Closed/Abandoned	Area was reconstructed and removed.
0960	West Bluff / Warming Hut Parking	Other	Ownership change from GOGA to PRES
0961	Crissy Field Old Coast Guard Parking	Other	Ownership change from GOGA to PRES

ROUTES REMOVED FROM PREVIOUS INVENTORY:			
Route #	Route Name	Reason for Removal	Comments
0962	East Beach / Crissy Field Parking	Other	Ownership change from GOGA to PRES
0965	Fort Baker Mixed Use Storage Parking	Closed/Abandoned	Area was reconstructed and removed.
0968	Golden Gate Bridge Northeast Parking	Other	Ownership changed from GOGA to PRES
0969	Golden Gate Bridge Southwest Parking	Other	Ownership changed from GOGA to PRES
0970	Langdon Court Parking	Other	Ownership changed from GOGA to PRES
0971	Baker Beach North Parking	Other	Ownership changed from GOGA to PRES
0972	Baker Beach South Parking	Other	Ownership changed from GOGA to PRES
0981	Battery East Parking	Other	Ownership changed from GOGA to FOPO
0982AZ	Parking Lot, Building 989 Area A	Other	Ownership changed from GOGA to PRES
0982BZ	Parking Lot, Building 989 Area B	Other	Ownership changed from GOGA to PRES
0982ZZ	Parking Lot, Building 989 (Fort Point)	Other	Ownership changed from GOGA to PRES

ROUTES REMOVED FROM PREVIOUS INVENTORY:			
Route #	Route Name	Reason for Removal	Comments
0983AZ	Marine Drive Parking Area A	Other	Ownership changed from GOGA to FOPO
0983BZ	Marine Drive Parking Area B	Other	Ownership changed from GOGA to FOPO
0983ZZ	Marine Drive Parking Areas	Other	Ownership changed from GOGA to FOPO
0984	Fort Point Parking Area	Other	Ownership changed from GOGA to FOPO
0992	Battery Godfrey Parking Area	Other	Ownership change from GOGA to PRES

# Section 3

## Park Summary Information



### Golden Gate National Recreation Area



Federal Lands Highway  
Road Inventory Program

## GOGA: PAVED ROUTE MILES AND PERCENTAGES BY FUNCTIONAL CLASS AND PCR

F.C.	Pavement Condition Rating (PCR)								TOTAL MILES
	Poor (0-60)		Fair (61-84)		Good (85-94)		Excellent (95-100)		
	MILES	%	MILES	%	MILES	%	MILES	%	
1	2.64	20.31%	2.58	19.85%	2.17	16.69%	1.36	10.46%	8.75
2	2.69	20.69%	0.96	7.38%	0.54	4.15%	0.06	0.46%	4.25
3									
4									
5									
6									
7									
8									
<b>Totals</b>	<b>5.33</b>	<b>41.00%</b>	<b>3.54</b>	<b>27.23%</b>	<b>2.71</b>	<b>20.85%</b>	<b>1.42</b>	<b>10.92%</b>	<b>13.00</b>

**Note:** The information in this table is derived from the PMS\_20 table in the Park database, which only contains processed data from routes collected with the Data Collection Vehicle (DCV). Information for Manually Rated Routes (MRR) and Parking Areas is not reported in this table. Only Functional Class 1, 2, & 7 routes, and any new routes not previously collected by RIP, are collected in Large Parks.

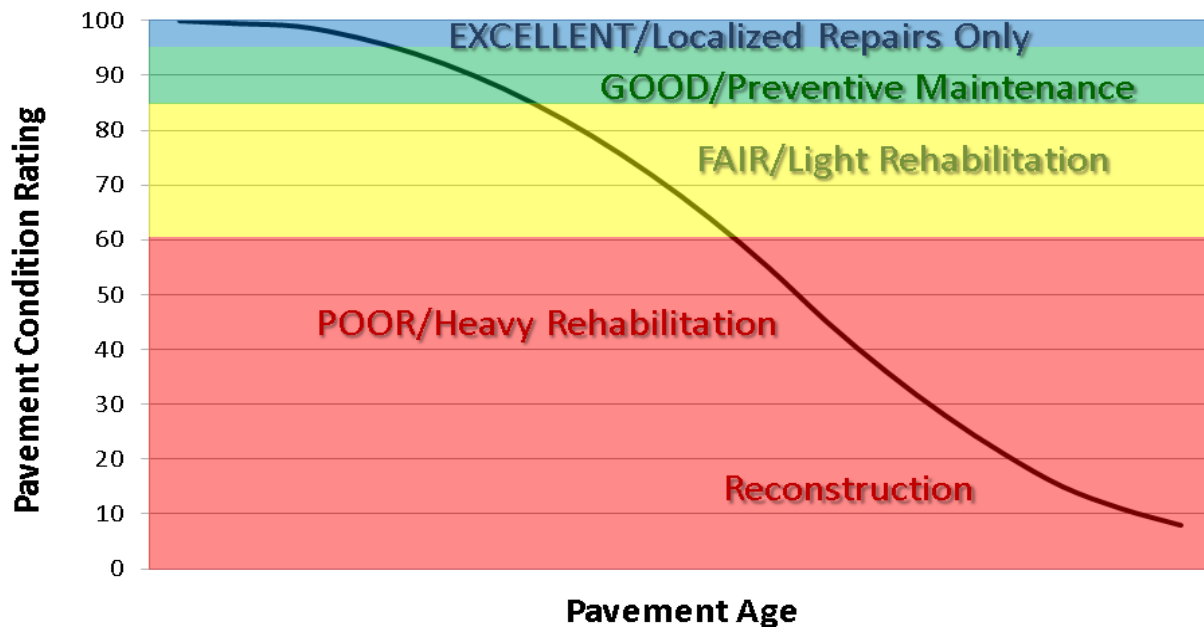
### Explanation of the Excellent, Good, Fair and Poor Condition Descriptions

In addition to the RIP Index changes that have been implemented in Cycle 5, we will also aim to provide greater assistance in translating excellent/good/fair/poor categories into pavement needs categories. The PCR can be used to indicate the place in the Pavement Life Cycle and the types of treatments that should be considered now and into the future.

- Excellent/New: PCR of 95-100. Pavements in this range will require only spot repairs
- Good: PCR of 85-94. Pavements in this range will likely be candidates for Preventive Maintenance. Examples include Chip and Slurry Seals, Micro Surfacing and Thin Overlays.
- Fair: PCR of 61-84. Pavements in this range will likely be candidates of Light Rehabilitation (L3R). Examples include single-lift overlays up to 2.5 inches in total thickness, milling and overlays.
- Poor: PCR of 0-60. Pavements in this range will likely be candidates of Heavy Rehabilitation or Reconstruction (H3R or 4R). Examples include Pulverization, Multiple Lift Overlays, and Reconstruction.

At this time, specific Maintenance and Rehabilitation activities should be evaluated and recommended at the project level. Site-specific conditions that influence treatment type should be determined based on performing a subsurface investigation and/or pavement condition survey, and not be based solely on RIP data. Additionally, RIP produces a snapshot of conditions the year in which the data was collected. For further information or to obtain additional Pavement Management System's data from our Highway Pavement Management Application (HPMA) please contact the Eastern Federal Lands pavement team.

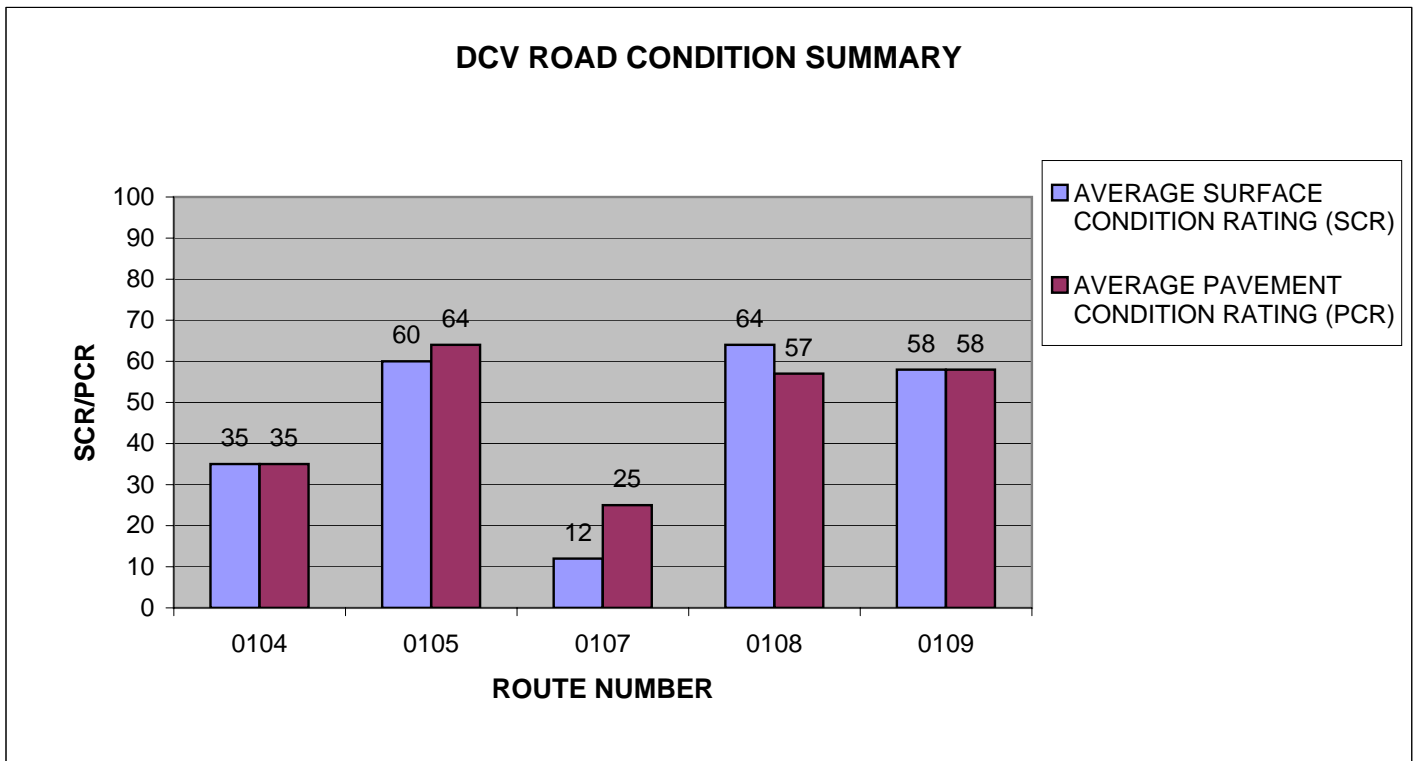
### Condition Categories and Treatments



# GOGA: DCV ROAD CONDITION SUMMARY

DCV - Data Collection Vehicle

ROUTE NUMBER	ROUTE NAME	FUNCT CLASS	ROUTE LENGTH	SURFACE TYPE	AVERAGE SURFACE CONDITION RATING (SCR)	AVERAGE PAVEMENT CONDITION RATING (PCR)
0104	MITCHELL ROAD	2	1.19	ASPHALT	35	35
0105	BUNKER ROAD	1	3.78	ASPHALT	60	64
0107	MCCULLOUGH ROAD	2	0.92	ASPHALT	12	25
0108	FIELD ROAD	2	1.09	ASPHALT	64	57
0109	CONZELMAN ROAD	1	4.82	ASPHALT	58	58

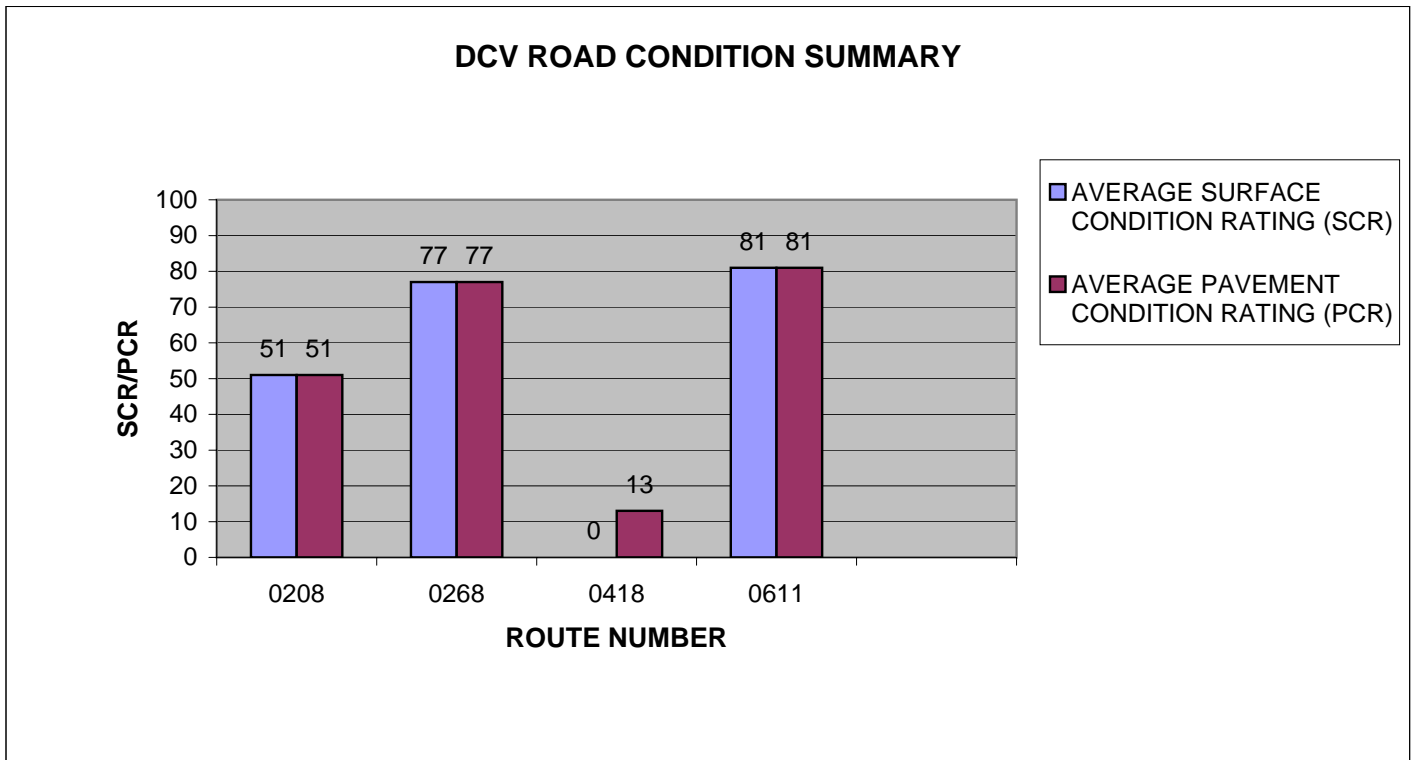




# GOGA: DCV ROAD CONDITION SUMMARY

DCV - Data Collection Vehicle

ROUTE NUMBER	ROUTE NAME	FUNCT CLASS	ROUTE LENGTH	SURFACE TYPE	AVERAGE SURFACE CONDITION RATING (SCR)	AVERAGE PAVEMENT CONDITION RATING (PCR)
0208	CONZELMAN-FIELD CONNECTOR ROAD	2	0.02	ASPHALT	51	51
0268	DANES ROAD	1	0.15	ASPHALT	77	77
0418	EAST ROAD	2	0.89	ASPHALT	0	13
0611	HAGGET-GLASSBURN LOOP	2	0.14	ASPHALT	81	81



# Section 4

## Park Route Location Maps

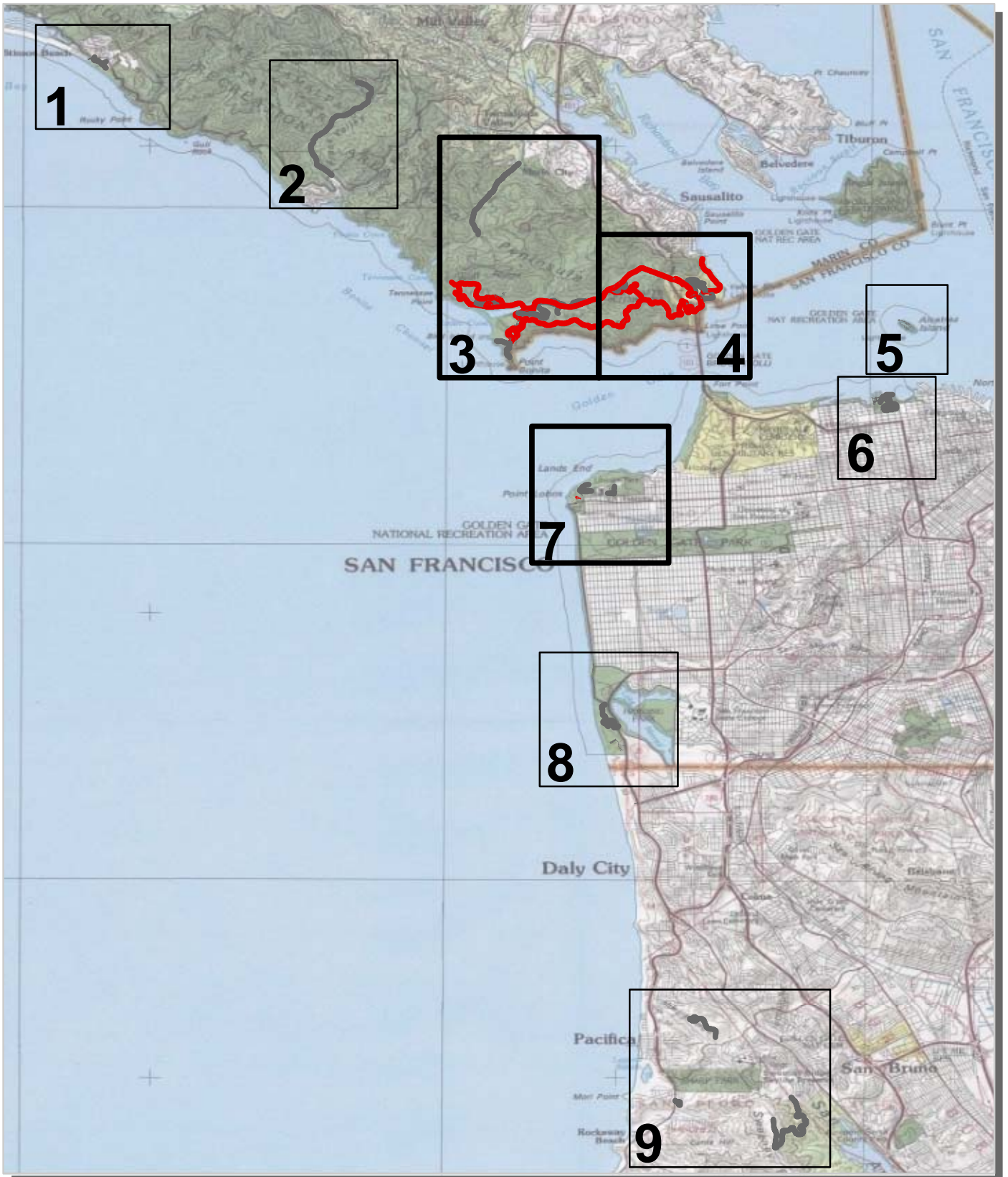




### Golden Gate National Recreation Area



Federal Lands Highway  
Road Inventory Program

**Golden Gate National Recreation Area  
Route Location Map  
Key Map**

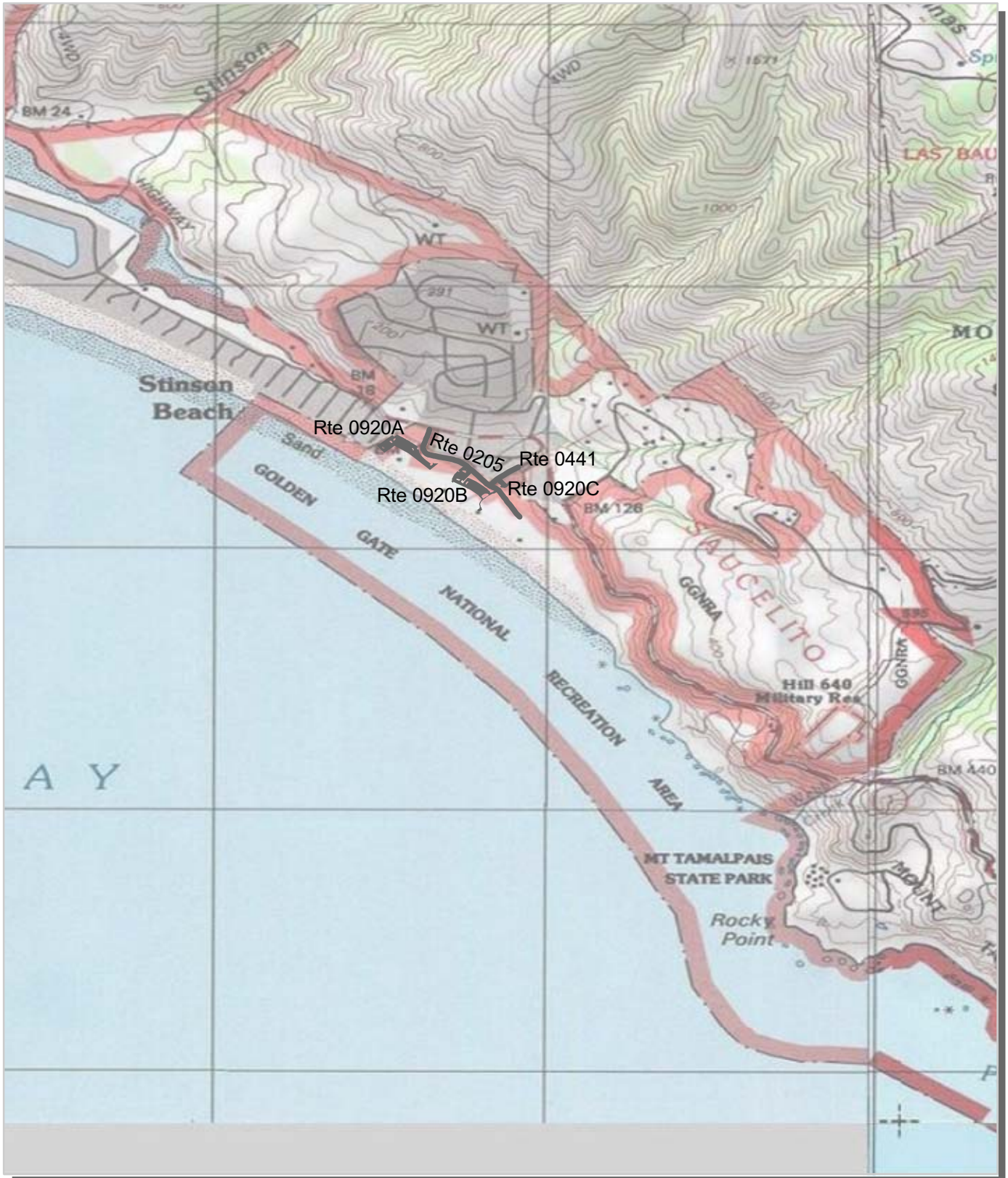


 Cycle 5 Collected Routes  
 Routes Collected in Previous Cycle





# Golden Gate National Recreation Area Route Location Map Area 1



Unique colors used to differentiate routes

— Routes Collected in Previous Cycle



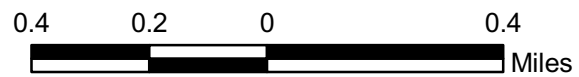


Golden Gate National Recreation Area  
Route Location Map  
Area 2



Unique colors used to differentiate routes

— Routes Collected in Previous Cycle



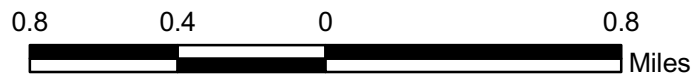


# Golden Gate National Recreation Area Route Location Map Area 3



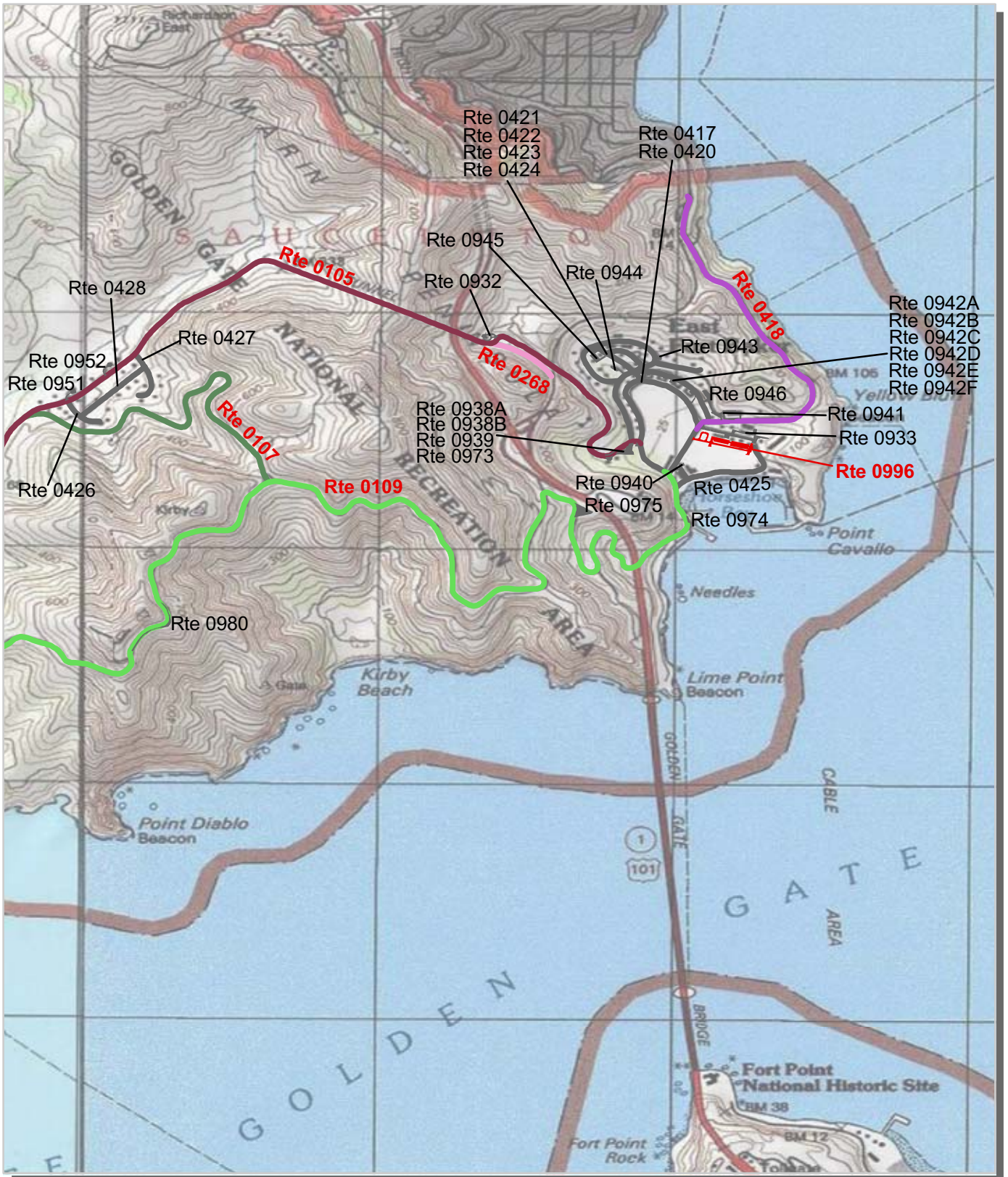
Unique colors used to differentiate routes

— Routes Collected in Previous Cycle



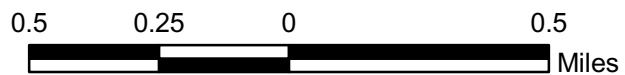


# Golden Gate National Recreation Area Route Location Map Area 4



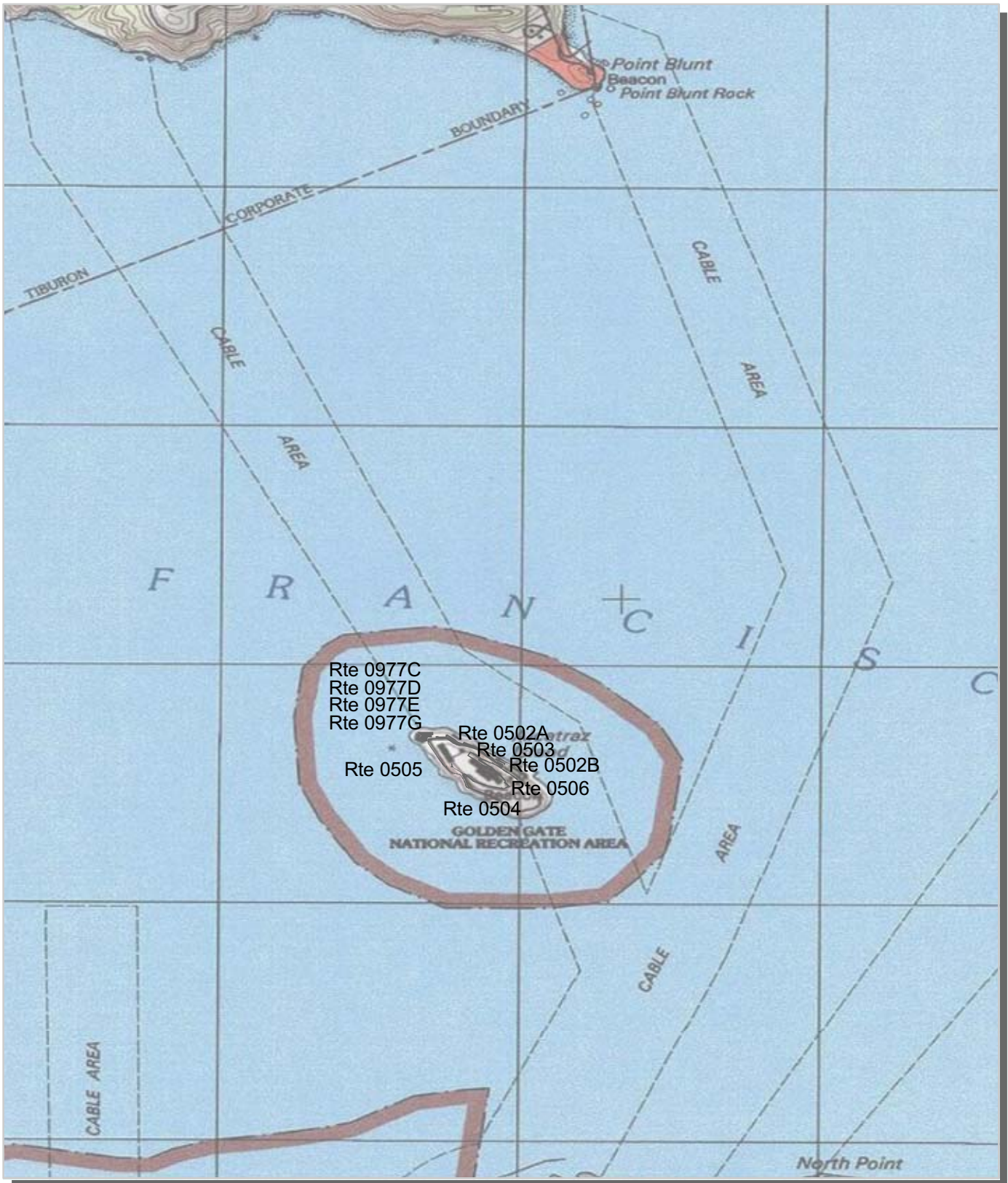
Unique colors used to differentiate routes

— Routes Collected in Previous Cycle



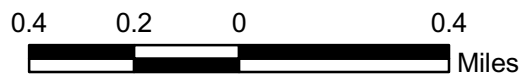


# Golden Gate National Recreation Area Route Location Map Area 5



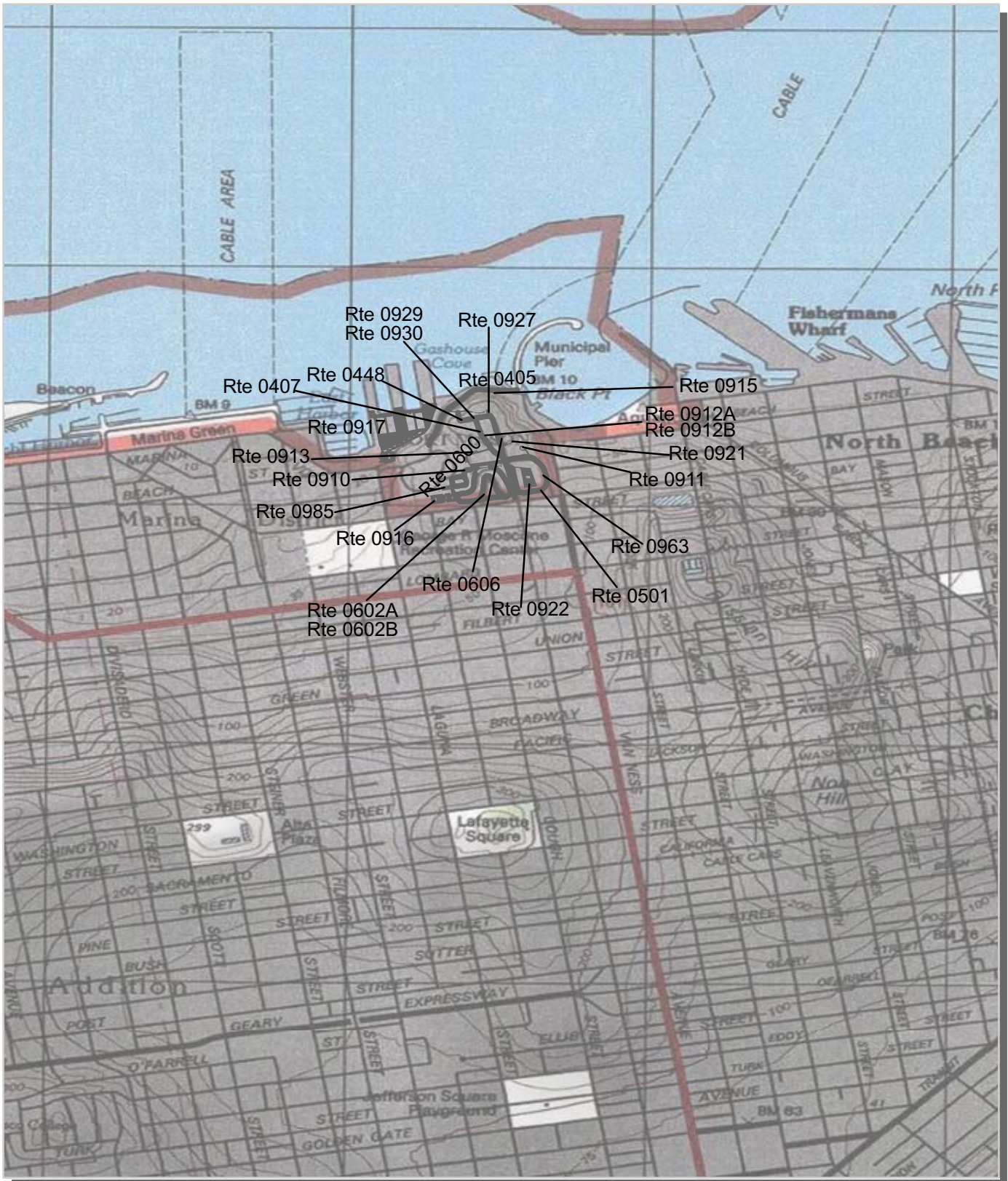
Unique colors used to differentiate routes

— Routes Collected in Previous Cycle



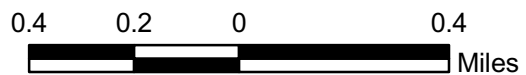


# Golden Gate National Recreation Area Route Location Map Area 6



Unique colors used to differentiate routes

— Routes Collected in Previous Cycle



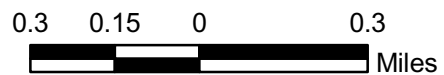


# Golden Gate National Recreation Area Route Location Map Area 7

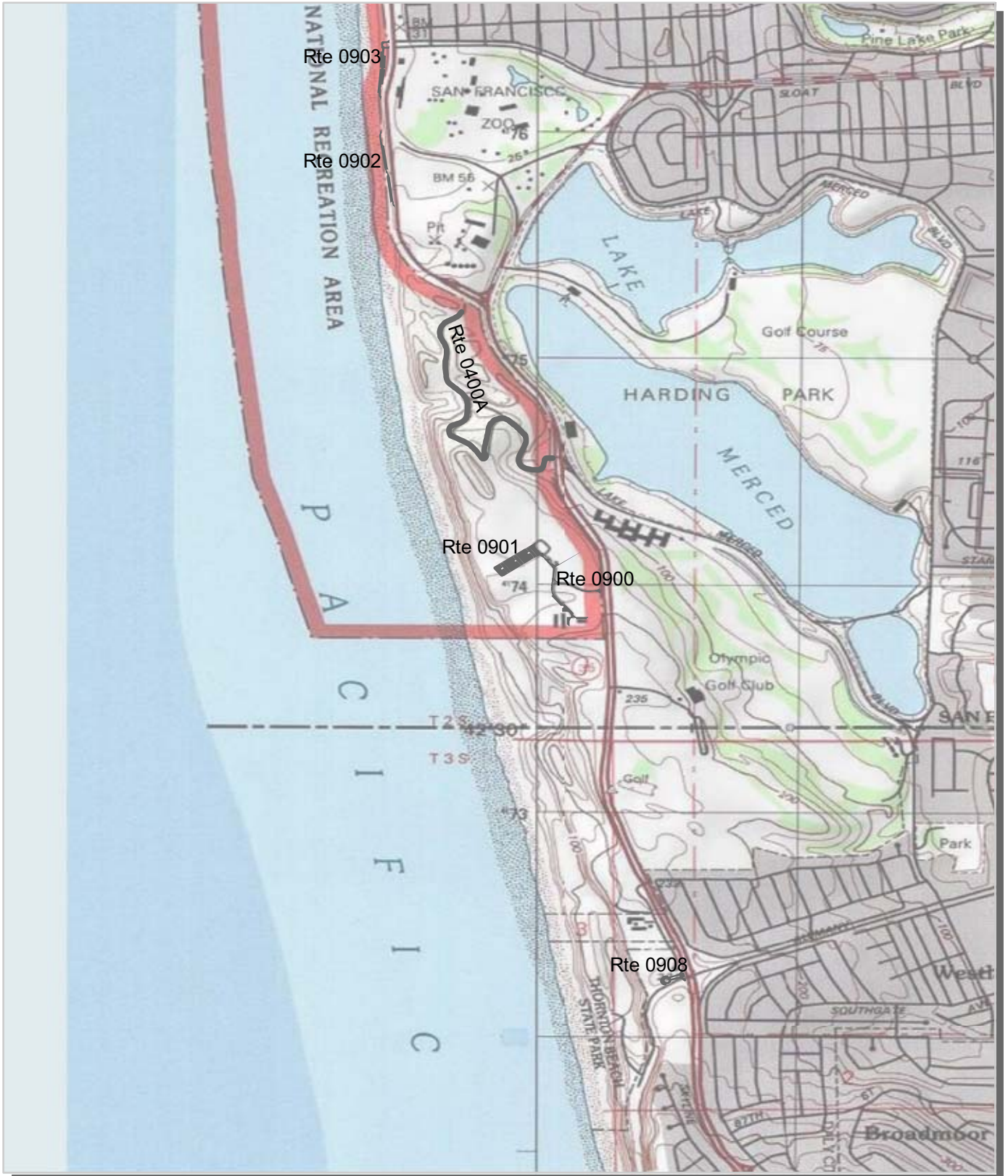


Unique colors used to differentiate routes

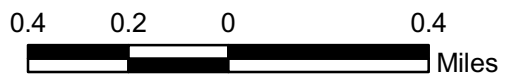
— Routes Collected in Previous Cycle



# Golden Gate National Recreation Area Route Location Map Area 8



Unique colors used to differentiate routes  
 — Routes Collected in Previous Cycle





# Golden Gate National Recreation Area Route Location Map Area 9

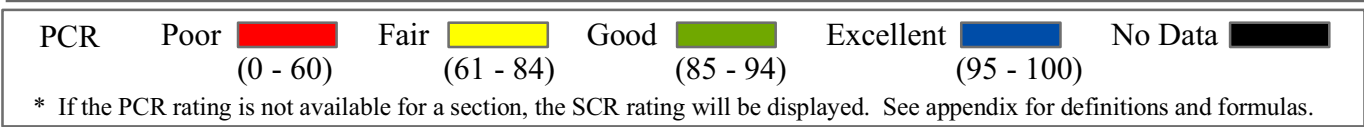
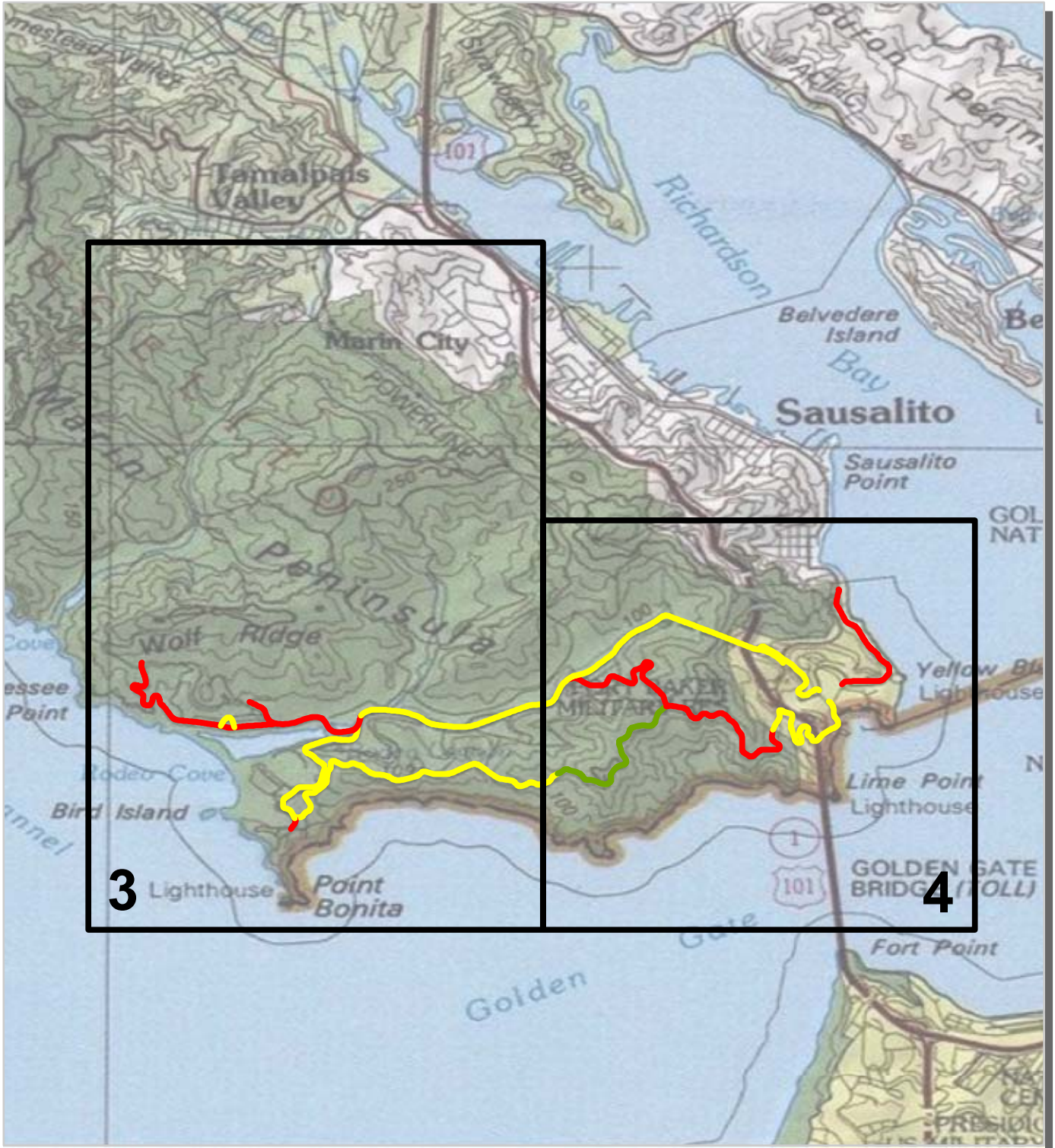


Unique colors used to differentiate routes  
— Routes Collected in Previous Cycle

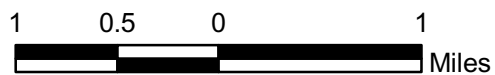




**Golden Gate National Recreation Area  
Route Condition Map  
PCR - Mile by Mile  
Key Map**

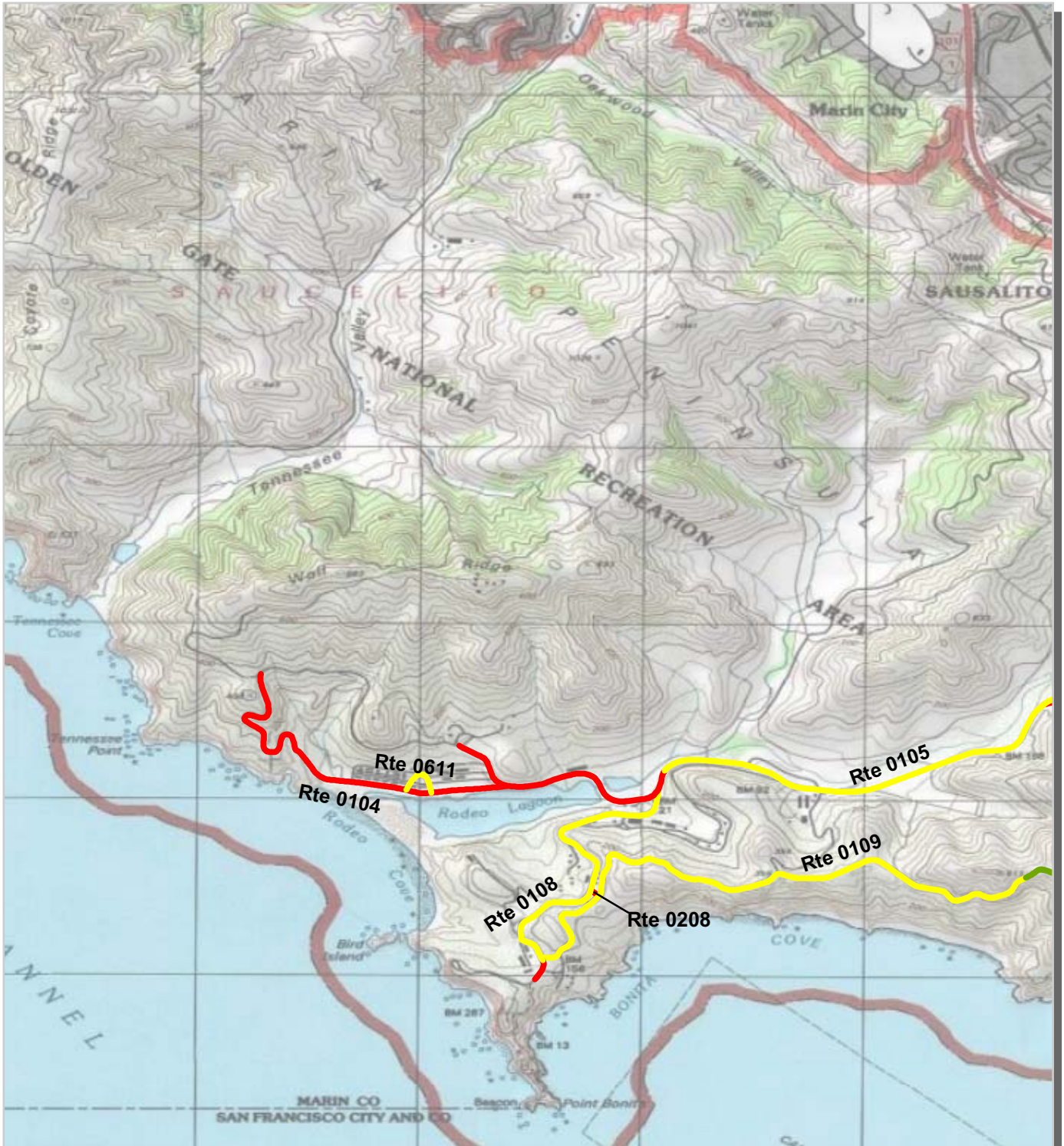


Note: Only routes collected by the DCV in Cycle-5 are displayed.





# Golden Gate National Recreation Area Route Condition Map PCR - Mile by Mile Area 3



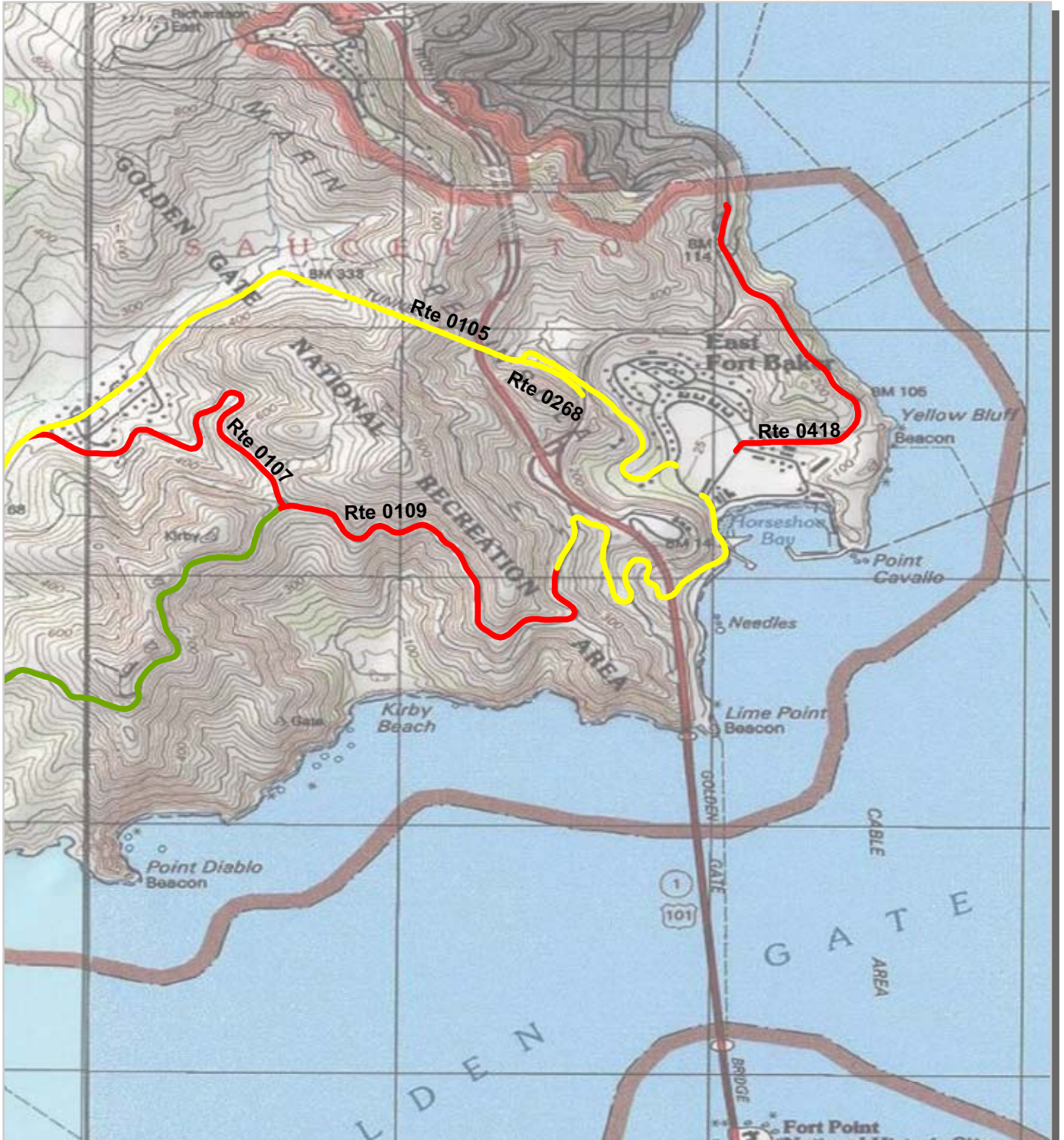
PCR	Poor	Fair	Good	Excellent	No Data
	(0 - 60)	(61 - 84)	(85 - 94)	(95 - 100)	

\* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.





# Golden Gate National Recreation Area Route Condition Map PCR - Mile by Mile Area 4



PCR	Poor	<span style="display: inline-block; width: 20px; height: 10px; background-color: red; border: 1px solid black;"></span>	Fair	<span style="display: inline-block; width: 20px; height: 10px; background-color: yellow; border: 1px solid black;"></span>	Good	<span style="display: inline-block; width: 20px; height: 10px; background-color: green; border: 1px solid black;"></span>	Excellent	<span style="display: inline-block; width: 20px; height: 10px; background-color: blue; border: 1px solid black;"></span>	No Data	<span style="display: inline-block; width: 20px; height: 10px; background-color: black; border: 1px solid black;"></span>
	(0 - 60)		(61 - 84)	(85 - 94)	(95 - 100)					

\* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.



**Section 5**  
**Paved Route**  
**Condition Rating Sheets**

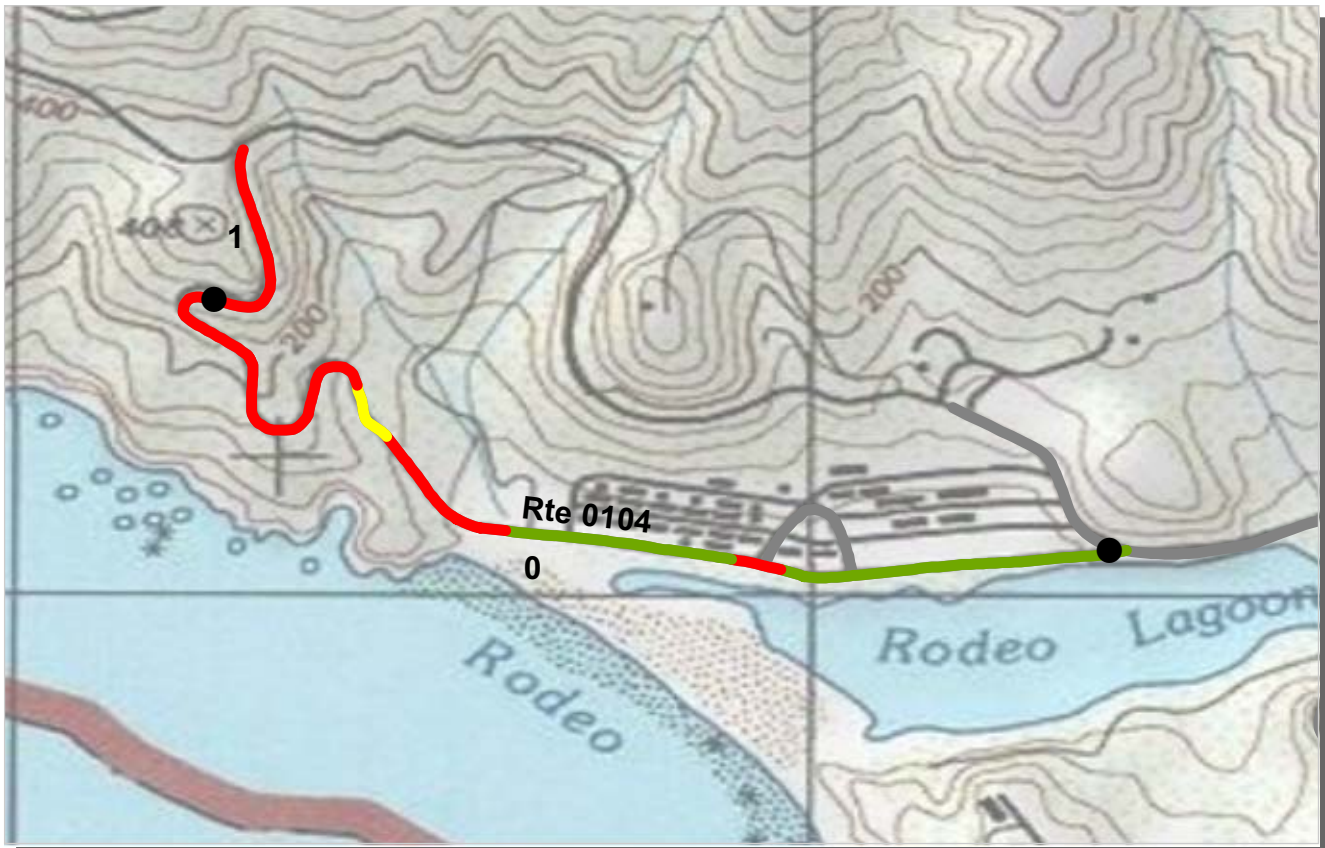


Golden Gate  
National Recreation Area



Federal Lands Highway  
Road Inventory Program





PCR    Poor ■    Fair ■    Good ■    Excellent ■    No Data ■  
           (0 - 60)           (61 - 84)           (85 - 94)           (95 - 100)

\* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

**ROUTE: 0104 MITCHELL ROAD**  
**GOGA : GOLDEN GATE NATIONAL RECREATION AREA**

**COLLECTED: 2/9/2010**  
**TOTAL LENGTH: 1.19 Miles**

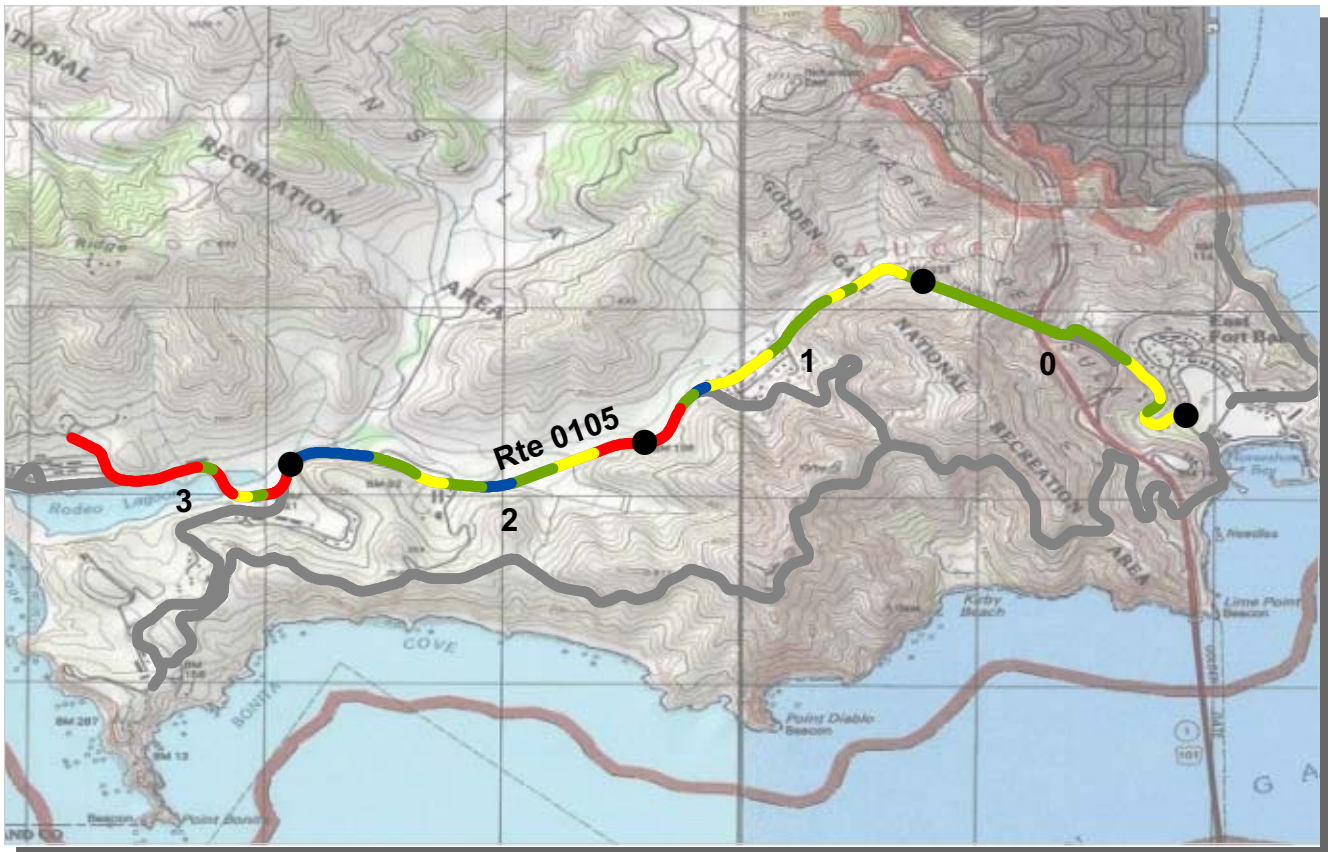
**PACIFIC WEST REGION**

<i>Section Number</i>	0	1			
<i>Section Length (mi)</i>	1.00	0.19			
<i>Cross Section Information</i>					
Number of Lanes	2	2			
Paved Width (ft)	20	16			
Lane Width (ft)	9	10			
<i>Roadway Condition Information</i>					
SCR (Surface Condition Rating)	42	0			
PCR (Pavement Condition Rating)	42	0			
<i>Distress Index Values</i>					
Structural Crack Index	42	0			
Transverse Cracking Index	80	48			
Patching Index	99	100			
Rutting Index	88	87			
Roughness Condition Index (RCI)	NC	NC			

NOTES:  
 Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
 See Section 10 for explanation of SCR, PCR, & all Distress Index Values.  
 NC - Not Collected    N/A - Non Applicable



**ROUTE: 0104 MITCHELL ROAD**



PCR    Poor ■    Fair ■    Good ■    Excellent ■    No Data ■  
           (0 - 60)           (61 - 84)           (85 - 94)           (95 - 100)

\* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

**ROUTE: 0105 BUNKER ROAD**  
**GOGA : GOLDEN GATE NATIONAL RECREATION AREA**

**COLLECTED: 2/11/2010**  
**TOTAL LENGTH: 3.78 Miles**

**PACIFIC WEST REGION**

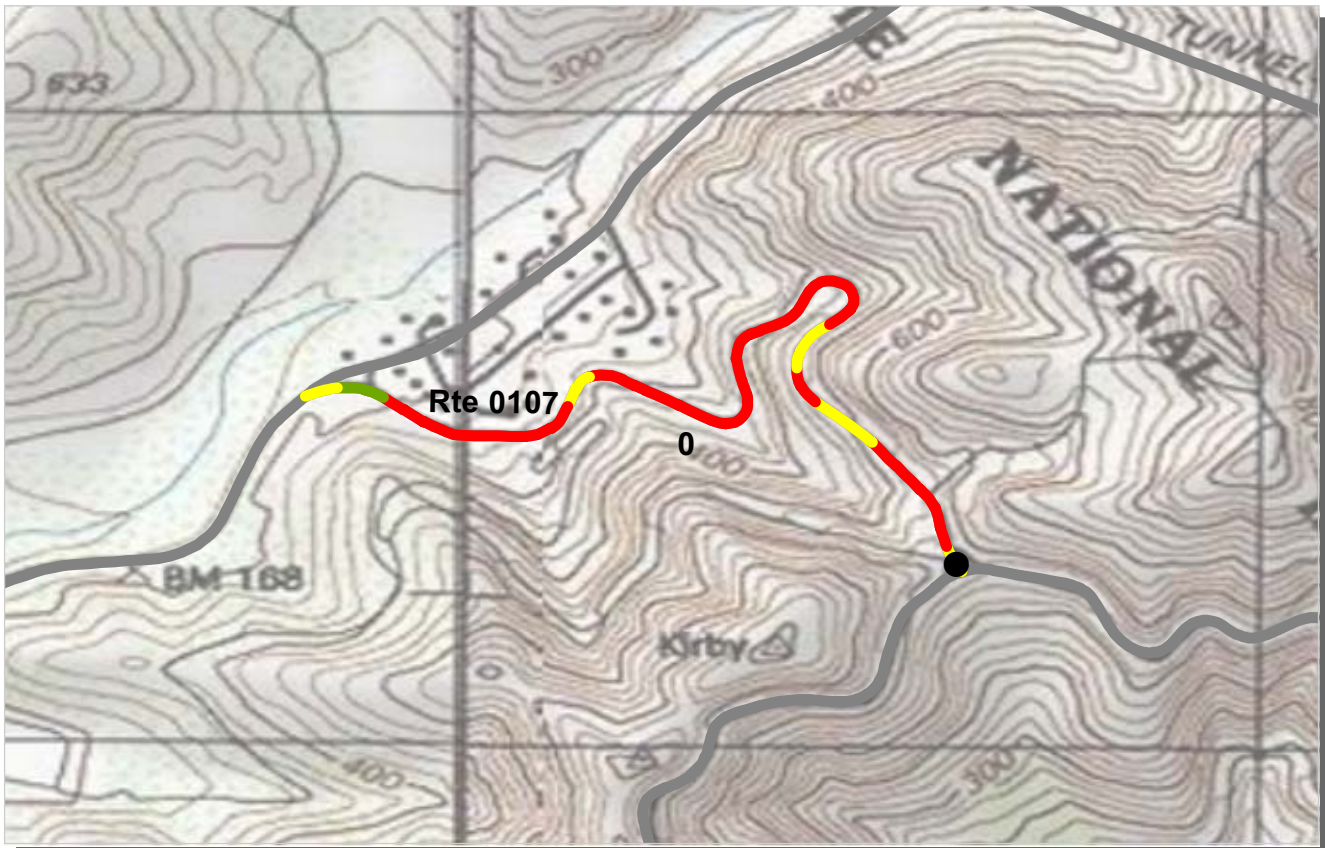
<i>Section Number</i>	0	1	2	3
<i>Section Length (mi)</i>	1.00	1.00	1.00	0.78
<i>Cross Section Information</i>				
Number of Lanes	2	2	2	2
Paved Width (ft)	23	24	24	25
Lane Width (ft)	16	12	12	13
<i>Roadway Condition Information</i>				
SCR (Surface Condition Rating)	97	59	69	0
PCR (Pavement Condition Rating)	85	66	76	19
<i>Distress Index Values</i>				
Structural Crack Index	97	59	69	0
Transverse Cracking Index	97	98	98	99
Patching Index	100	100	100	91
Rutting Index	98	97	98	85
Roughness Condition Index (RCI)	66	77	86	47

**NOTES:**

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
 See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected    N/A - Non Applicable

**ROUTE: 0105 BUNKER ROAD**



PCR    Poor ■    Fair ■    Good ■    Excellent ■    No Data ■  
           (0 - 60)           (61 - 84)           (85 - 94)           (95 - 100)

\* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

**ROUTE: 0107 MCCULLOUGH ROAD**  
**GOGA : GOLDEN GATE NATIONAL RECREATION AREA**

**COLLECTED: 2/11/2010**  
**TOTAL LENGTH: 0.92 Miles**

**PACIFIC WEST REGION**

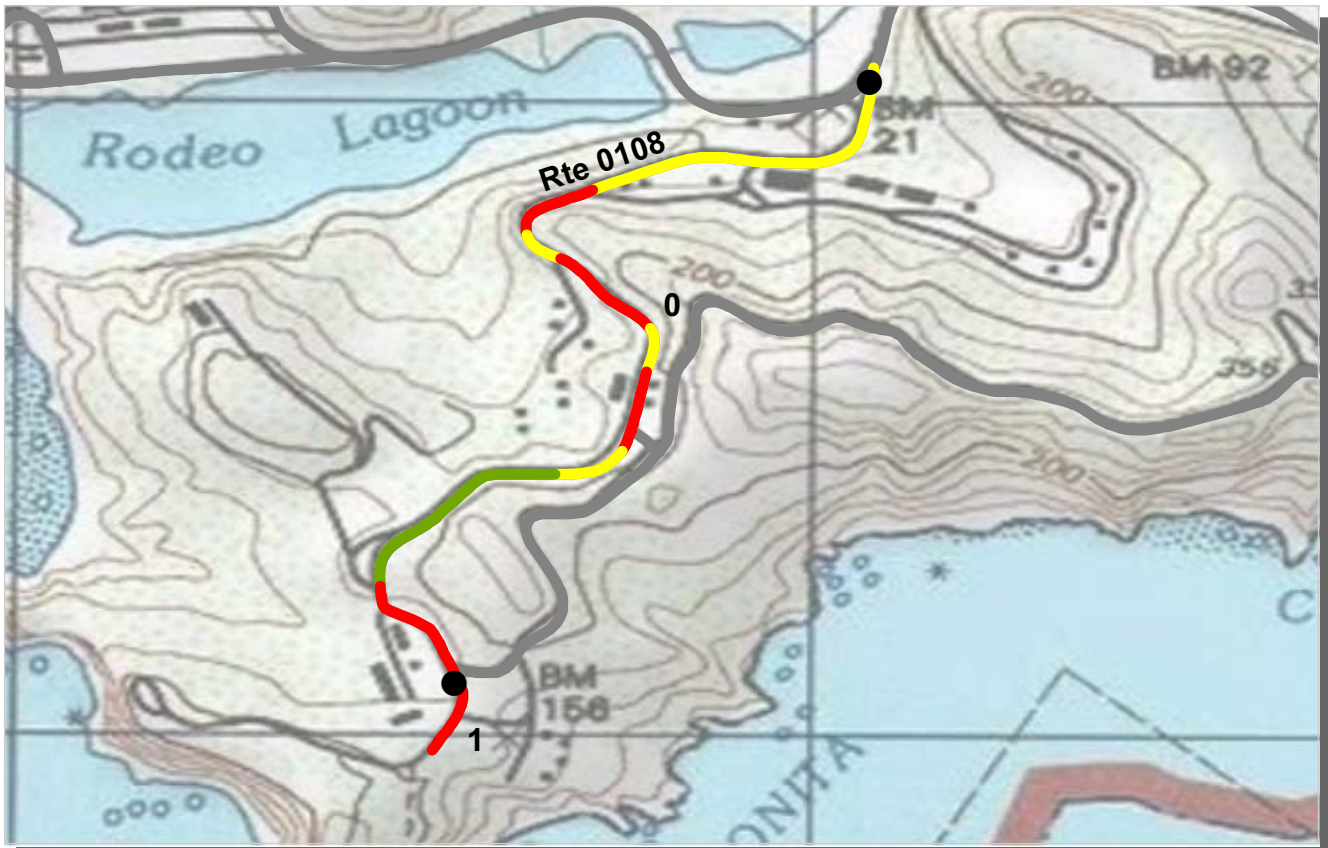
<b>Section Number</b>	0				
<b>Section Length (mi)</b>	0.92				
<b>Cross Section Information</b>					
Number of Lanes	2				
Paved Width (ft)	26				
Lane Width (ft)	13				
<b>Roadway Condition Information</b>					
SCR (Surface Condition Rating)	12				
PCR (Pavement Condition Rating)	25				
<b>Distress Index Values</b>					
Structural Crack Index	12				
Transverse Cracking Index	98				
Patching Index	98				
Rutting Index	93				
Roughness Condition Index (RCI)	44				

NOTES:  
 Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
 See Section 10 for explanation of SCR, PCR, & all Distress Index Values.  
 NC - Not Collected    N/A - Non Applicable



**ROUTE: 0107 MCCULLOUGH ROAD**





PCR    Poor █    Fair █    Good █    Excellent █    No Data █  
           (0 - 60)           (61 - 84)           (85 - 94)           (95 - 100)

\* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

**ROUTE: 0108 FIELD ROAD**  
**GOGA : GOLDEN GATE NATIONAL RECREATION AREA**

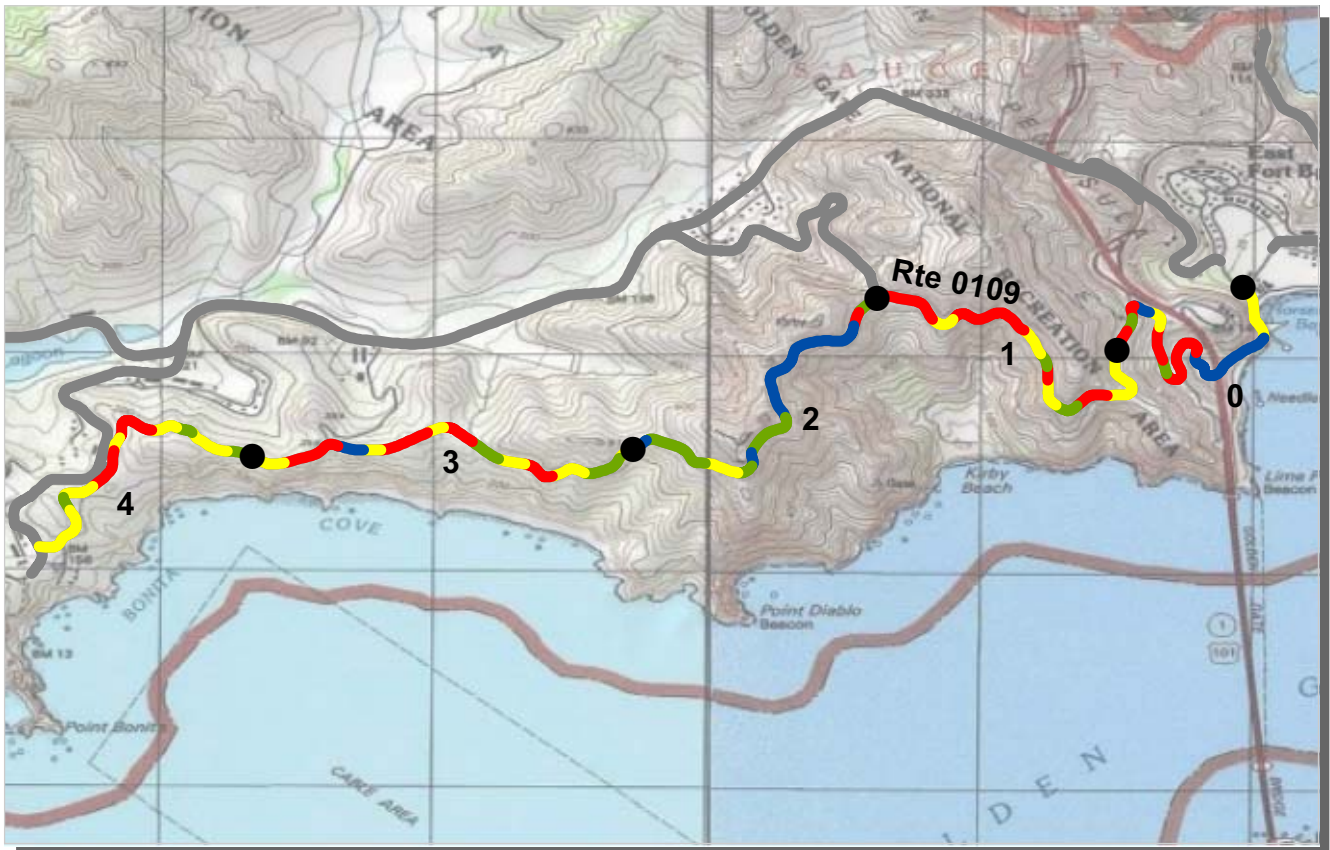
**COLLECTED: 2/9/2010**  
**TOTAL LENGTH: 1.09 Miles**

**PACIFIC WEST REGION**

<i>Section Number</i>	0	1			
<i>Section Length (mi)</i>	1.00	0.09			
<i>Cross Section Information</i>					
Number of Lanes	2	2			
Paved Width (ft)	22	23			
Lane Width (ft)	10	12			
<i>Roadway Condition Information</i>					
SCR (Surface Condition Rating)	70	0			
PCR (Pavement Condition Rating)	61	16			
<i>Distress Index Values</i>					
Structural Crack Index	70	0			
Transverse Cracking Index	97	100			
Patching Index	94	98			
Rutting Index	89	69			
Roughness Condition Index (RCI)	48	39			

NOTES:  
 Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
 See Section 10 for explanation of SCR, PCR, & all Distress Index Values.  
 NC - Not Collected    N/A - Non Applicable

**ROUTE: 0108 FIELD ROAD**



PCR    Poor ■    Fair ■    Good ■    Excellent ■    No Data ■  
           (0 - 60)           (61 - 84)           (85 - 94)           (95 - 100)

\* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

**ROUTE: 0109 CONZELMAN ROAD**  
**GOGA : GOLDEN GATE NATIONAL RECREATION AREA**

**COLLECTED: 2/9/2010**  
**TOTAL LENGTH: 4.82 Miles**

**PACIFIC WEST REGION**

<i>Section Number</i>	0	1	2	3	4
<i>Section Length (mi)</i>	1.00	1.00	1.00	1.00	0.82
<i>Cross Section Information</i>					
Number of Lanes	2	2	2	1	1
Paved Width (ft)	19	25	19	16	17
Lane Width (ft)	12	13	12	16	15
<i>Roadway Condition Information</i>					
SCR (Surface Condition Rating)	48	36	91	67	45
PCR (Pavement Condition Rating)	48	36	91	67	45
<i>Distress Index Values</i>					
Structural Crack Index	48	36	91	67	45
Transverse Cracking Index	97	97	98	84	97
Patching Index	96	98	98	100	99
Rutting Index	97	96	96	96	94
Roughness Condition Index (RCI)	NC	NC	NC	NC	NC

**NOTES:**

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.

See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected    N/A - Non Applicable

**ROUTE: 0109 CONZELMAN ROAD**



PCR    Poor ■    Fair ■    Good ■    Excellent ■    No Data ■  
           (0 - 60)           (61 - 84)           (85 - 94)           (95 - 100)

\* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

**ROUTE: 0208 CONZELMAN-FIELD CONNECTOR ROAD**  
**GOGA : GOLDEN GATE NATIONAL RECREATION AREA**

**COLLECTED: 2/9/2010**  
**TOTAL LENGTH: 0.02 Miles**

**PACIFIC WEST REGION**

<b>Section Number</b>	0				
<b>Section Length (mi)</b>	0.02				
<b>Cross Section Information</b>					
Number of Lanes	2				
Paved Width (ft)	27				
Lane Width (ft)	11				
<b>Roadway Condition Information</b>					
SCR (Surface Condition Rating)	51				
PCR (Pavement Condition Rating)	51				
<b>Distress Index Values</b>					
Structural Crack Index	51				
Transverse Cracking Index	100				
Patching Index	100				
Rutting Index	87				
Roughness Condition Index (RCI)	NC				

**NOTES:**

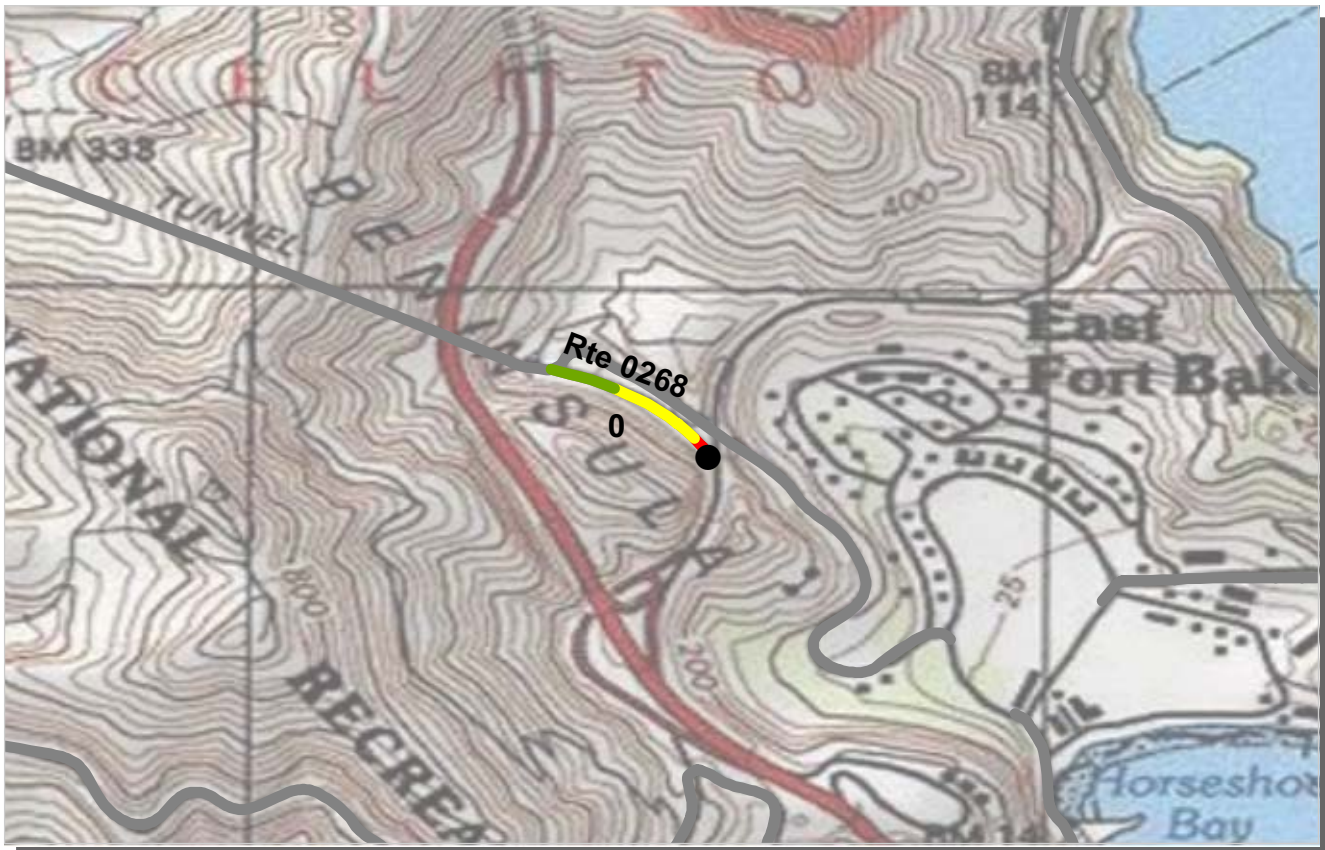
Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.

See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected    N/A - Non Applicable

**ROUTE: 0208 CONZELMAN-FIELD CONNECTOR ROAD**





PCR	Poor	<span style="display:inline-block; width:15px; height:15px; background-color:red;"></span>	Fair	<span style="display:inline-block; width:15px; height:15px; background-color:yellow;"></span>	Good	<span style="display:inline-block; width:15px; height:15px; background-color:lightgreen;"></span>	Excellent	<span style="display:inline-block; width:15px; height:15px; background-color:blue;"></span>	No Data	<span style="display:inline-block; width:15px; height:15px; background-color:black;"></span>
	(0 - 60)		(61 - 84)	(85 - 94)	(95 - 100)					

\* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

**ROUTE: 0268 DANES ROAD**  
**GOGA : GOLDEN GATE NATIONAL RECREATION AREA**

**COLLECTED: 2/11/2010**  
**TOTAL LENGTH: 0.15 Miles**

**PACIFIC WEST REGION**

<b>Section Number</b>	0				
<b>Section Length (mi)</b>	0.15				
<b>Cross Section Information</b>					
Number of Lanes	2				
Paved Width (ft)	34				
Lane Width (ft)	14				
<b>Roadway Condition Information</b>					
SCR (Surface Condition Rating)	77				
PCR (Pavement Condition Rating)	77				
<b>Distress Index Values</b>					
Structural Crack Index	77				
Transverse Cracking Index	92				
Patching Index	100				
Rutting Index	98				
Roughness Condition Index (RCI)	NC				

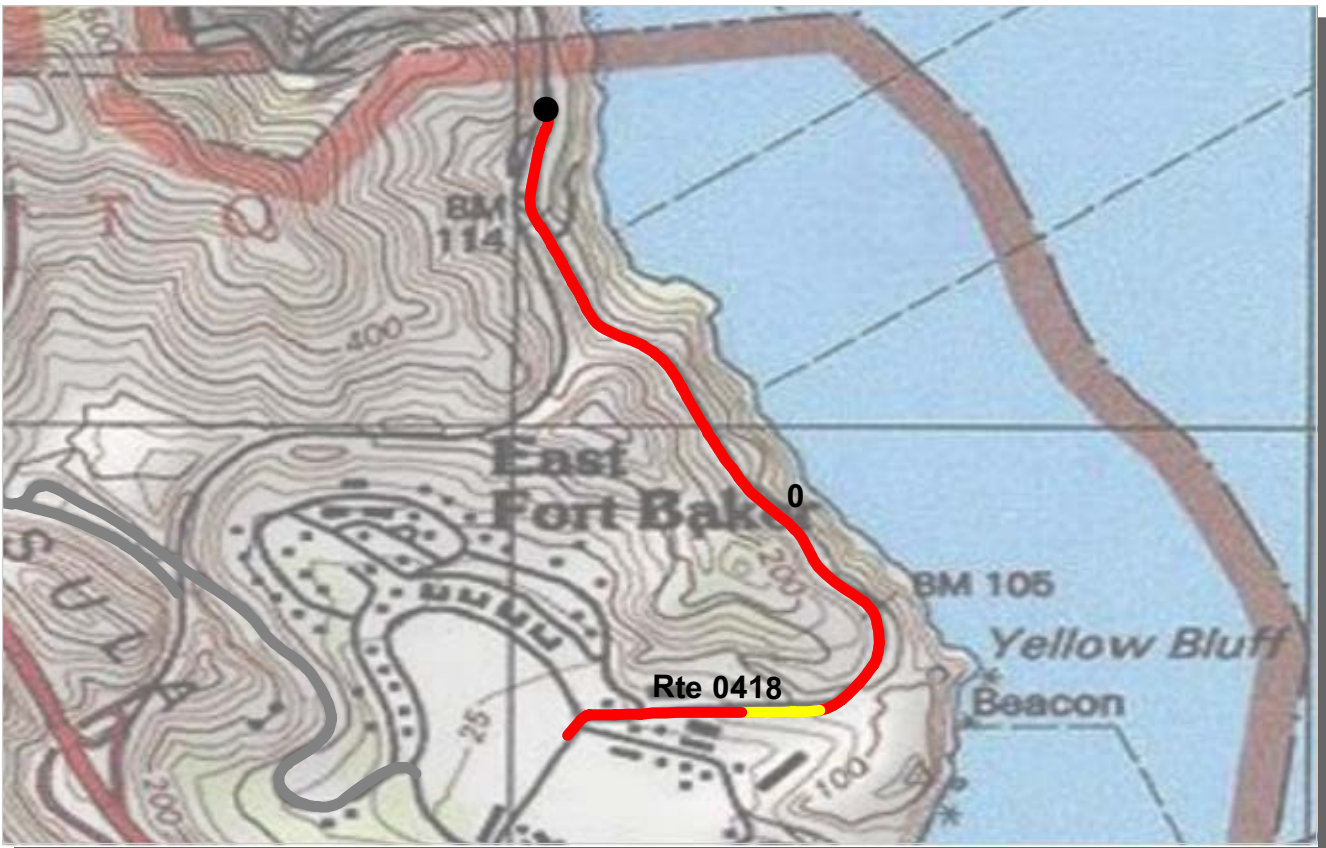
**NOTES:**

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.

See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected N/A - Non Applicable

**ROUTE: 0268 DANES ROAD**



PCR    Poor ■    Fair ■    Good ■    Excellent ■    No Data ■  
           (0 - 60)           (61 - 84)           (85 - 94)           (95 - 100)

\* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

**ROUTE: 0418 EAST ROAD**  
**GOGA : GOLDEN GATE NATIONAL RECREATION AREA**

**COLLECTED: 2/11/2010**  
**TOTAL LENGTH: 0.89 Miles**

**PACIFIC WEST REGION**

<b>Section Number</b>	0				
<b>Section Length (mi)</b>	0.89				
<b>Cross Section Information</b>					
Number of Lanes	2				
Paved Width (ft)	34				
Lane Width (ft)	14				
<b>Roadway Condition Information</b>					
SCR (Surface Condition Rating)	0				
PCR (Pavement Condition Rating)	13				
<b>Distress Index Values</b>					
Structural Crack Index	0				
Transverse Cracking Index	92				
Patching Index	74				
Rutting Index	87				
Roughness Condition Index (RCI)	32				

NOTES:  
 Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
 See Section 10 for explanation of SCR, PCR, & all Distress Index Values.  
 NC - Not Collected    N/A - Non Applicable

**ROUTE: 0418 EAST ROAD**





PCR    Poor ■    Fair ■    Good ■    Excellent ■    No Data ■  
           (0 - 60)           (61 - 84)           (85 - 94)           (95 - 100)

\* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

**ROUTE: 0611 HAGGET-GLASSBURN LOOP**  
**GOGA : GOLDEN GATE NATIONAL RECREATION AREA**

**COLLECTED: 2/9/2010**  
**TOTAL LENGTH: 0.14 Miles**

**PACIFIC WEST REGION**

<b>Section Number</b>	0				
<b>Section Length (mi)</b>	0.14				
<b>Cross Section Information</b>					
Number of Lanes	2				
Paved Width (ft)	24				
Lane Width (ft)	10				
<b>Roadway Condition Information</b>					
SCR (Surface Condition Rating)	81				
PCR (Pavement Condition Rating)	81				
<b>Distress Index Values</b>					
Structural Crack Index	81				
Transverse Cracking Index	100				
Patching Index	94				
Rutting Index	86				
Roughness Condition Index (RCI)	NC				

**NOTES:**

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
 See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected    N/A - Non Applicable

**ROUTE: 0611 HAGGET-GLASSBURN LOOP**

**Section 6**  
**Manually Rated Route  
Condition Rating Sheets**



Golden Gate  
National Recreation Area



Federal Lands Highway  
Road Inventory Program

# GOLDEN GATE NATIONAL RECREATION AREA

## Route 0465

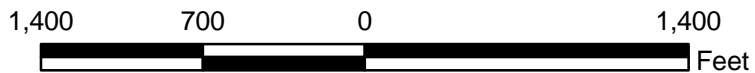
OLD BUNKER ROAD

FROM END OF ROUTE 0105 (BUNKER ROAD)

TO DEAD END AT COASTAL TRAIL

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles **	MRL	
					Length (mi)	Width (ft)
0465	NONPUBLIC	1/29/2010	87,067	1.50	0.97	17
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR	Surface Type
1	0	2	NO CURB AND GUTTER	NO CURB	POOR/45	AS

\* Lane miles are based on 11' lane widths



0

**Section 7**  
**Parking Area**  
**Condition Rating Sheets**



Golden Gate  
National Recreation Area



Federal Lands Highway  
Road Inventory Program

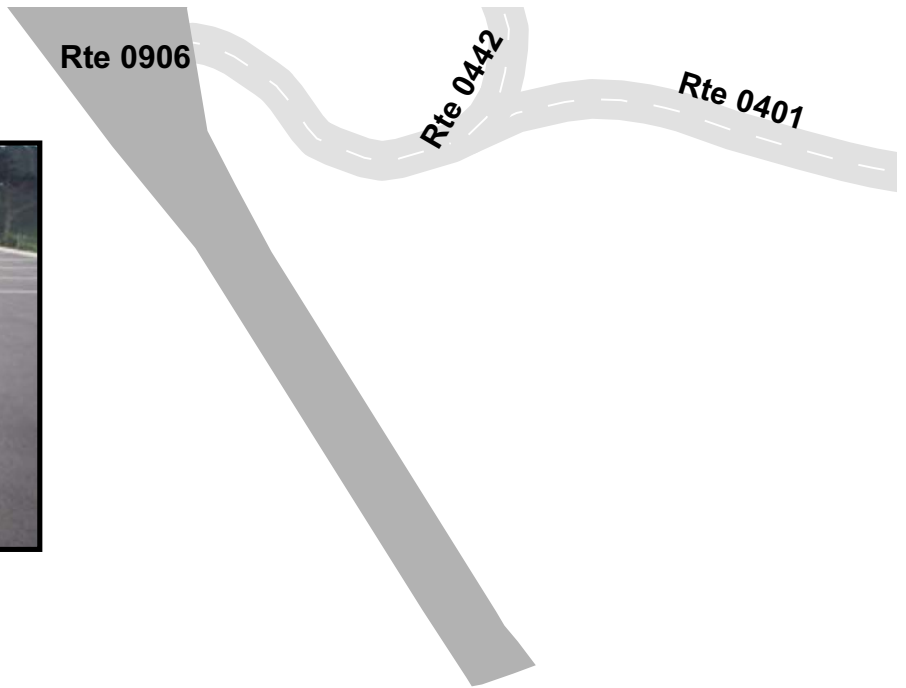
# GOLDEN GATE NATIONAL RECREATION AREA

## Route 0905

MERRIE WAY PARKING  
FROM POINT LOBOS AVENUE  
TO PARKING

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0905	PUBLIC	1/29/2010	70,105	1.21	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
0	20	1	NO CURB AND GUTTER	CONCRETE CURB	EXCELLENT/97

\* Lane miles are based on 11' lane widths



# GOLDEN GATE NATIONAL RECREATION AREA

## Route 0919CZZ

HEADLANDS INSTITUTE WEST PARKING AREAS  
ADJACENT TO ROUTE 0608 (EDISON STREET) ON LEFT AND RIGHT

Summary Record

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0919CZZ	PUBLIC	1/29/2010	7,279	0.13	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
0	0	0	CONCRETE CURB AND GUTTER	NO CURB	SUMMARY/45

\* Lane miles are based on 11' lane widths





# GOLDEN GATE NATIONAL RECREATION AREA

## Route 0919CAZ

HEADLANDS INSTITUTE WEST PARKING A  
ADJACENT TO ROUTE 0608 (EDISON STREET) ON RIGHT

Subcomponent Record

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0919CAZ	PUBLIC	1/29/2010	3,548	0.06	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
0	0	0	CONCRETE CURB AND GUTTER	NO CURB	POOR/45

\* Lane miles are based on 11' lane widths



# GOLDEN GATE NATIONAL RECREATION AREA

## Route 0919CBZ

HEADLANDS INSTITUTE WEST PARKING B  
ADJACENT TO ROUTE 0608 (EDISON STREET) ON LEFT

Subcomponent Record

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0919CBZ	PUBLIC	1/29/2010	3,731	0.06	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
0	0	0	NO CURB AND GUTTER	NO CURB	POOR/45

\* Lane miles are based on 11' lane widths





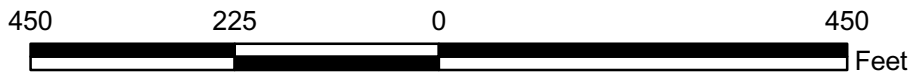
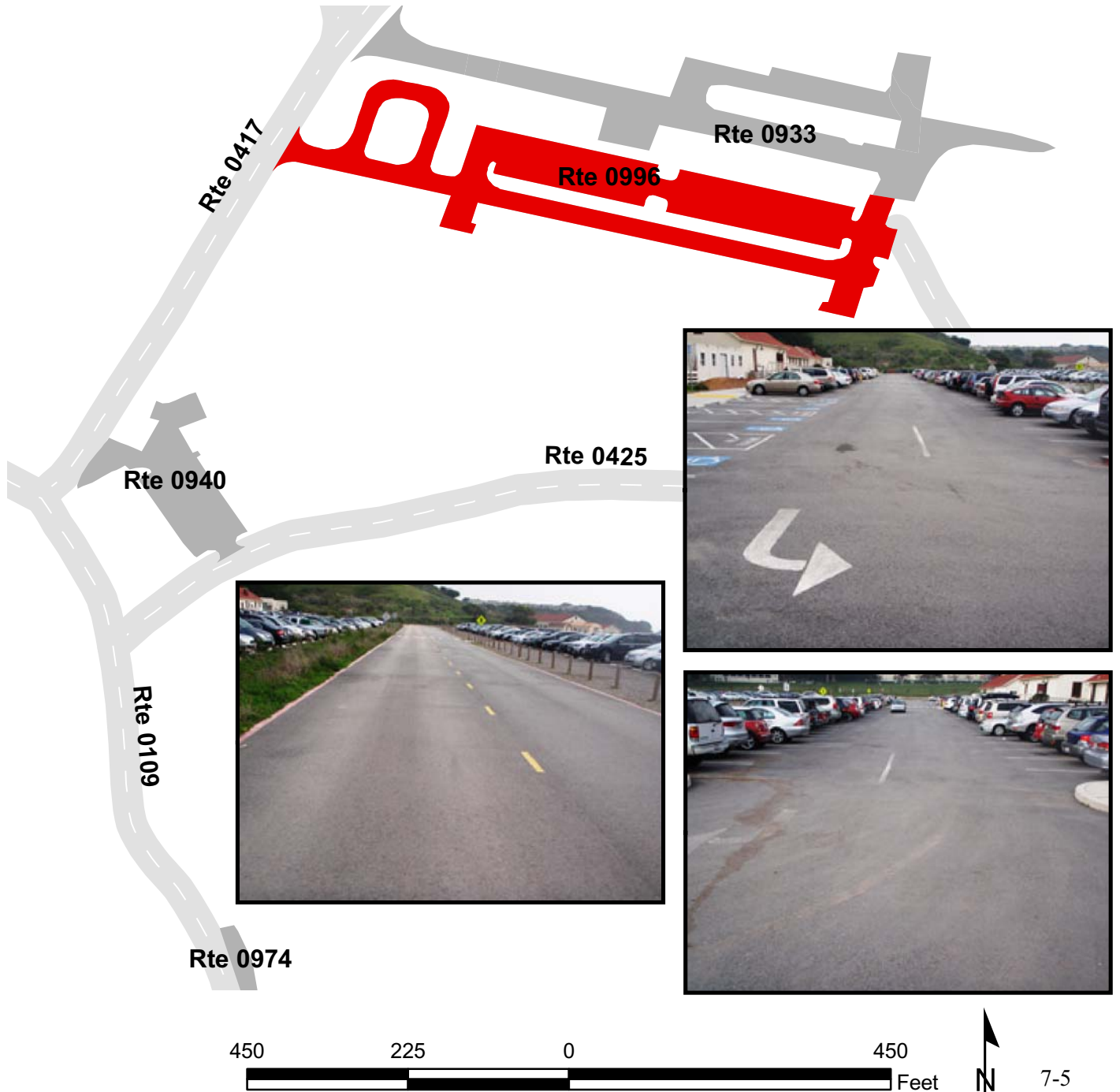
# GOLDEN GATE NATIONAL RECREATION AREA

## Route 0996

BAY AREA DISCOVERY MUSEUM PARKING AREA  
FROM ROUTE 0417 (MURRAY CIRCLE)  
TO PARKING

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0996	PUBLIC	1/29/2010	55,795	0.96	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
0	7	0	CONCRETE CURB AND GUTTER	CONCRETE CURB	GOOD/90

\* Lane miles are based on 11' lane widths



**Section 8**  
**Route**  
**Maintenance Features Summaries**



Golden Gate  
National Recreation Area



Federal Lands Highway  
Road Inventory Program

## **DCV ROUTE MAINTENANCE FEATURES SUMMARY**

This park is classified as a Large Park. DCV Route Maintenance Features are only collected in Cycle 5 on routes that were not collected in a previous cycle or routes that have had a significant change in alignment since the previous collection. For this park unit no DCV Route Maintenance Features were collected in Cycle-5, there are no DCV Route Maintenance Features to report for Cycle-5.

**Section 9**  
**Route Maintenance Features**  
**Road Logs**



Golden Gate  
National Recreation Area



Federal Lands Highway  
Road Inventory Program

## **ROUTE MAINTENANCE FEATURES ROAD LOGS**

This park is classified as a Large Park. Therefore, in Cycle 5, no features asset inventory was conducted unless the route was previously uncollected by RIP.

# Section 10 Appendix



## Golden Gate National Recreation Area



Federal Lands Highway  
Road Inventory Program

## **Explanation of Changes to the RIP Index Equations and Determination of PCR**

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In 2005, the FHWA began implementing the use of a Pavement Management System to assist the National Park Service in prioritizing Pavement Maintenance and Rehabilitation activities. The PMS used by FHWA is the Highway Pavement Management Application (HPMA) and this software has the ability to store inventory and condition data from RIP and forecast future performance using prediction models. Outputs include performance and condition reports at the National, Region, Park, or Route level. A regional prioritized list and optimization have been produced for most regions and the Federal Highway Deferred Maintenance is calculated via the HPMA as well.

In an effort to improve the accuracy of treatment recommendations and pavement condition descriptions vis a vis the distresses and indexes that comprise the Pavement Condition Rating (PCR), an extensive study was completed throughout 2010 that has resulted in changes to the Road Inventory Program condition reporting method and specifically, the calculation of PCR. It was determined that a better representation of PCR could be achieved by modifying the relative impact certain distresses would have on the overall rating.

Through the use of HPMA data, it was noted that false failure indicators existed with the existing PCR model, and that it would be necessary to reduce their impact. The distresses affected in this way were Rutting and Roughness. Conversely, experience showed that roadways with extensive cracking present were often shown to have a high PCR. Therefore, the crack index models were adjusted to be more sensitive to changes in crack severity or quantity. It was also determined that these issues were not due to a problem with data acquisition (i.e. the RIP “van”), but with the way the collected data was processed. The final change was to provide guidance on when to use the Roughness Condition Index (RCI) in the PCR calculation. Roughness data is of little value to determining overall condition on routes that, due to their length or geometrics, have lower vehicle operating speeds. Therefore, in Cycle 5, only routes that have lengths of one half mile or greater and posted speed limits of 25 mph or greater will have RCI reported and included in the PCR calculations.

The changes that were implemented were endorsed by management at both the FHWA and NPS. In order to show the effectiveness of these changes, several sites were ground truth tested to ensure that an improvement was achieved between the relationship of PCR and the actual Maintenance and Rehabilitation needs that were represented. The changes will allow greater use of RIP and HPMA data for not simply condition data reporting, but also as a reliable tool for project identification and selection.

# Explanation of the Excellent, Good, Fair and Poor Condition Descriptions

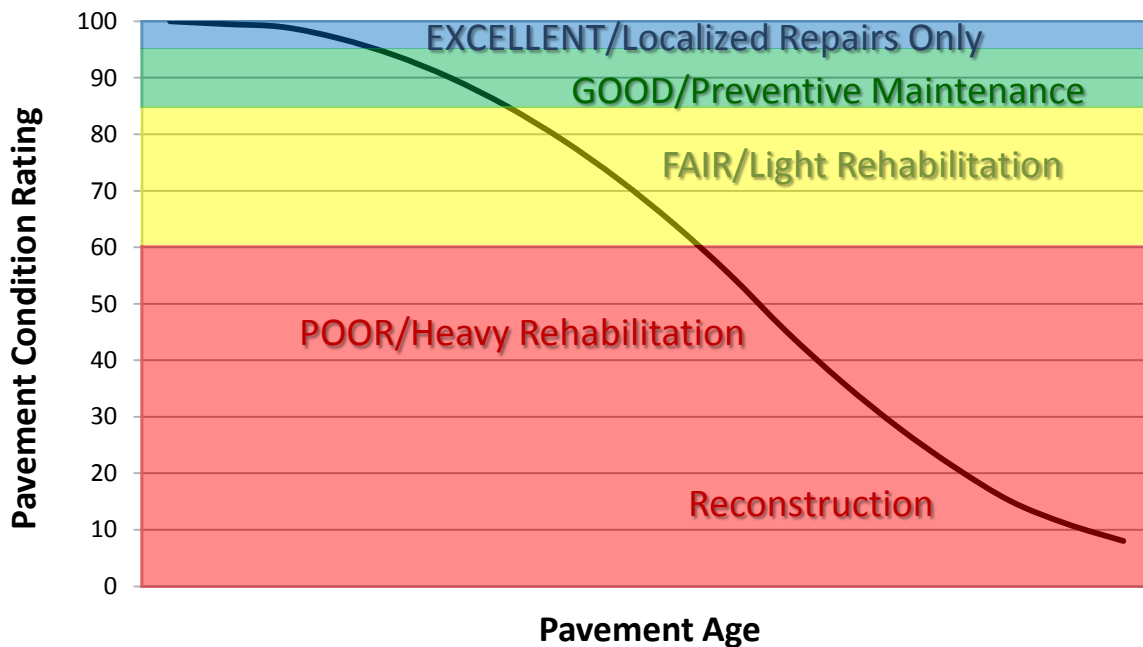
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In addition to the RIP Index changes that will be implemented in Cycle 5, we will also aim to provide greater assistance in translating good/fair/poor categories into pavement needs categories. The PCR can be used to indicate the place in the Pavement Life Cycle and the types of treatments that should be considered now and into the future.

- Excellent/New: PCR of 95-100. Pavements in this range will require only spot repairs
- Good: PCR of 85-94. Pavements in this range will likely be candidates for Preventive Maintenance. Examples include Chip and Slurry Seals, Micro Surfacing and Thin Overlays.
- Fair: PCR of 61-84. Pavements in this range will likely be candidates of Light Rehabilitation (L3R). Examples include single-lift overlays up to 2.5 inches in total thickness, milling and overlays.
- Poor: PCR of 60 or below. Pavements in this range will likely be candidates of Heavy Rehabilitation or Reconstruction (H3R or 4R). Examples include Pulverization, Multiple Lift Overlays, and Reconstruction.

At this time, specific Maintenance and Rehabilitation activities should be evaluated and recommended at the project level. Site-specific conditions that influence treatment type should be determined based on performing a subsurface investigation and/or pavement condition survey, and not be based solely on RIP data. Additionally, RIP produces a snapshot of conditions the year in which the data was collected. For further information or to obtain additional Pavement Management System's data from our Highway Pavement Management Application (HPMA) please contact the Eastern Federal Lands pavement team.

## Condition Categories and Treatments





## DESCRIPTION OF RATING SYSTEM

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The Federal Highway Administration (FHWA), Road Inventory Program (RIP) for the National Park Service (NPS), collects roadway condition data on paved surfaces (asphalt, concrete, brick, and cobblestone) on roads, parkways, and parking areas in national parks nationwide. The road surface condition data is collected using an automated Data Collection Vehicle (DCV). Roads having brick or cobblestone surfacing are not normally surveyed with the DCV, but are manually rated for condition rating.

The FHWA RIP is implemented based on the premise that an accurate pavement surface condition assessment can be accomplished using automated crack detection technology as applied to digital images. Various methods of pavement condition assessment have been developed over the years with varying degrees of accuracy and acceptance. The use of digital photography to record pavement images and subsequent crack detection and classification has undergone continuous improvements over the past decade. Digital cameras with increasingly superior resolution and high definition have become more affordable, and the proprietary programming code and algorithms have been improved in crack detection software.

With the use of quality digital photography and automated crack detection software, FHWA RIP is tasked with executing a pavement condition assessment on about 5000 miles of National Park Service roads and parkways. Foremost in setting up the basis of pavement distress identification is employing the distress identification protocols used by FHWA. There is no single distress identification system that is universal among entities conducting a program of distress identification. For the purpose of the NPS RIP, FHWA employs distress identification protocols that are specific to this program.

FHWA has referenced the *“Distress Identification Manual for the Long-Term Pavement Performance Program”*, Publication No. FHWA-RD 03-031, June 2003, as the point-of-reference for distress types on NPS pavement. In truth, the FHWA RIP distress types are similar to those described in the LTPP manual with some modifications. This document, *“Distress Identification Manual for the NPS Road Inventory Program, Cycle 5, 2010-2013”* was developed using the *“Distress Identification Manual for the Long-Term Pavement Performance Program”* as a guideline. Definitions of severity levels based on crack width contained in this document adhere to the LTPP Distress ID Manual. Modifications have been made to the definition of Alligator and Longitudinal Cracking and determination of Alligator Cracking severity. This manual also addresses Rutting and Roughness and its application to RIP.

In 2010, FHWA RIP began the fifth cycle of data collection in national parks. For Cycle 5, data will be collected in approximately 81 large parks (10 or more paved route miles) on Functional Class 1, 2, and 7 routes plus any new routes or parking areas previously not collected, totaling an estimated 4,459 paved route miles. Additionally, 168 small parks will be collected comprising approximately 529 paved route miles and associated paved parking areas. The data is used to support the National Park Service road maintenance program and Pavement Management System (PMS) developed and maintained by FHWA.

This “*Distress Identification Manual for the NPS Road Inventory Program, Cycle 5, 2010-2013*” will be used as a reference resource in crack detection and classification, determination of distress severity and extent, and in the calculation of distress index values for the FHWA RIP Cycle 5.

# **SURFACE DISTRESSES**

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## **Surface Condition Rating - SCR**

Surface distresses are measured in the primary lane only. In the classification and measurement of all paved surface condition data, results will be reported in the database in record intervals of 0.02 miles (105.6 feet) (smallest granularity) along the route.

### **Surface distresses determined from digital images**

- Transverse Cracks
- Longitudinal Cracks
- Alligator Cracks
- Patching/Potholes

### **Surface distress measured by DCV (Data Collection Vehicle) LRMS (Laser Rut Measuring System)**

- Rutting

### **Each of the five surface distresses is assigned a computed surface distress index**

- Transverse Crack Index
- Longitudinal Crack Index
- Alligator Crack Index
- Patching/Pothole Index
- Rutting Index

Surface distress data are classified as listed above, measured for severity, and quantified for extent. Classification, severity, and extent of these five surface distresses comprise the three main elements for calculation of SCR (Surface Condition Rating).

In addition to the five surface distresses, a **Structural Crack Index** is computed, which is a combination of the Longitudinal Crack Index and the Alligator Crack Index. The Structural Crack Index is then used in lieu of the LC and AC indices to compute SCR.

## **Roughness Condition Index - RCI**

### **Additional condition data measured by DCV (lasers and accelerometers)**

- Roughness (IRI)

Roughness is measured by FHWA's DCV and reported as International Roughness Index (IRI) in inches/mile. Using IRI, the Roughness Condition Index (RCI) is computed.

## **Pavement Condition Rating - PCR**

Using the SCR (computed from the five surface distresses) and the RCI, an overall Pavement Condition Rating (PCR) is computed. The formula for PCR is:

$$\text{Asphalt PCR} = (0.60 * \text{SCR}) + (0.40 * \text{RCI})$$

$$\text{Concrete PCR} = \text{RCI}$$

A detailed description of each distress index formula, roughness index formula, SCR and PCR is provided in this document beginning on page 23.

Each classified surface distress will fall into one or more *severity*...LOW, MEDIUM, or HIGH based on criteria listed. For each severity, an *extent* is established based on the measured quantity of the distress within that severity. Within each *severity* individual distresses are assigned a *Maximum Allowable Extent* (MAE). For example, LOW severity transverse cracking may be allowed up to 21.1 cracks within a 0.02 interval before it reaches MAE and fails.

The index formulas are based on a scale of 0-100. A PCR index value of 100 would indicate a “new” road with no measurable distresses or rough ride. A PCR value of 60 is determined to be *terminable serviceability* and the road is considered failed. The range of index values with condition descriptors is:

POOR (<=60), FAIR (61 - 84), GOOD (85 - 94), EXCELLENT (95 - 100)

Index values are generally computed based on cumulative deducts of the measured severities. As shown in the index formulas below, as any single severity reaches or exceeds MAE, the index computes to a value of 60 or less, and the road fails for that 0.02 interval.

**Note:** As a result of a unique combination of measured surface distresses and IRI, index values occasionally compute to less than 0 or greater than 100. In this instance, an index value < 0 defaults to 0. Index values > 100 default to 100. For all indices, a higher value indicates a better road condition, and a lower value indicates a poorer road condition.

On the following page, Table 1 summarizes the different types of distresses measured.

**TABLE 1: Distress Summary**

<b>ASPHALT-SURFACED PAVEMENT DISTRESS TYPES with RUTTING and ROUGHNESS</b>				
<b>DISTRESS TYPE</b>	<b>UNIT OF MEASURE...</b>	<b>...CONVERTED TO</b>	<b>DEFINED SEVERITY LEVELS?</b>	<b>MEASURED BY</b>
<b>Alligator Cracking</b>	<b>Square Feet</b>	<b>Percent of Lane Per 0.02 Mile</b>	<b>Yes</b>	<b>Digital Image Crack Detection Software</b>
<b>Transverse Cracking</b>	<b>Linear Feet</b>	<b>Number of Cracks Per 0.02 Mile</b>	<b>Yes</b>	<b>Digital Image Crack Detection Software</b>
<b>Longitudinal Cracking</b>	<b>Linear feet</b>	<b>Percent of Lane Length Per 0.02 Mile</b>	<b>Yes</b>	<b>Digital Image Crack Detection Software</b>
<b>Patching/Potholes</b>	<b>Square Feet</b>	<b>Percent of Lane Per 0.02 Mile</b>	<b>No</b>	<b>Digital Image Crack Detection Software</b>
<b>Rutting</b>	<b>Inches</b>	<b>Rut Depth Per 0.02 Mile</b>	<b>Yes</b>	<b>DCV – Laser Rut Measuring System (LRMS)</b>
<b>Roughness</b>	<b>IRI</b>	<b>*RCI Per 0.02 Mile</b>	<b>No</b>	<b>DCV – Lasers /Accelerometers</b>

**\*Note: Roughness is measured on concrete roadways, but surface distresses and rutting are not measured. For concrete, PCR = RCI**

# **ALLIGATOR CRACKING**

## **Description**

Alligator cracking is considered a combination of fatigue and block cracking. It is a series of interconnected cracks in various stages of development. Alligator cracking develops into a many-sided pattern that resembles chicken wire or alligator skin. It can occur anywhere in the road lane. Alligator cracking must have a quantifiable area.

## **Severity Levels**

### **LOW**

An area of cracks with no or very few interconnecting cracks and the cracks are not spalled. Cracks are  $\leq 0.25$  in (6mm) in mean width. Cracks in the pattern are no further apart than 1 foot (0.328 m). May be sealed cracks with sealant in good condition and a crack width that cannot be determined.

### **MEDIUM**

An area of interconnected cracks that form a complete pattern. Cracks may be slightly spalled. Cracks are  $>0.25$  in. (6 mm) and  $\leq 0.75$  in. (19 mm) or any crack with a mean width  $\leq 19$  mm and adjacent low severity cracking. Cracks in the pattern are no further apart than 6 in. (150 mm).

### **HIGH**

An area of interconnected cracks forming a complete pattern. Cracks are moderately or severely spalled. Cracks are  $>0.75$  in (19mm) or any crack with a mean width  $\leq 0.75$  in (19mm) and adjacent medium to high severity random cracking.

A combination of observed crack width and crack pattern is used to determine overall severity of alligator cracking. Based on above description of each severity, the highest level of crack width and crack pattern determines overall severity. Table 2 illustrates this.

**TABLE 2: Alligator Crack Severity Levels**

<b>ALLIGATOR CRACKING SEVERITY LEVELS</b>		<b>Crack Pattern</b>		
		<b>LOW</b>	<b>MED</b>	<b>HIGH</b>
<b>Crack Width</b>	<b>LOW</b>	L	M	H
	<b>MED</b>	M	M	H
	<b>HI</b>	H	H	H



## **LONGITUDINAL CRACKING**

### **Description**

Longitudinal cracking occurs predominantly parallel to the pavement centerline. It can occur anywhere within the lane. Longitudinal cracks occurring in the wheelpath may be noteworthy.

### **Severity Levels**

#### **LOW**

Cracks with a mean width of  $< 0.25$  in. (6 mm). Sealed cracks with sealant in good condition and a width that cannot be determined.

#### **MED**

Cracks with a mean width  $> 0.25$  in. (6 mm) and  $\leq 0.75$  in. (19 mm). Also, any crack with a mean width  $< 0.75$  in. (19 mm) and adjacent random low severity cracking.

#### **HIGH**

Cracks with a mean width  $> 0.75$  in. (19 mm). Also, any crack with a mean width  $< 0.75$  in. (19 mm) and adjacent random medium to high severity cracking.

## **TRANSVERSE CRACKING**

### **Description**

Transverse cracking occurs predominantly perpendicular to the pavement centerline. It can occur anywhere within the lane.

### **Severity Levels**

#### **LOW**

Cracks with a mean width of  $< 0.25$  in. (6 mm). Sealed cracks with sealant in good condition and a width that cannot be determined.

#### **MED**

Cracks with a mean width  $> 0.25$  in. (6 mm) and  $\leq 0.75$  in. (19 mm). Also, any crack with a mean width  $< 0.75$  in. (19 mm) and adjacent random low severity cracking.

#### **HIGH**

Cracks with a mean width  $> 0.75$  in. (19 mm). Also, any crack with a mean width  $< 0.75$  in. (19 mm) and adjacent random medium to high severity cracking.

## **PATCHING AND POTHOLES**

### **Description**

Patching is an area of pavement surface that has been removed and replaced with patching material or an area of pavement surface that has had additional patching material applied. Patching may encompass partial lane or full lane width. On full lane width patching; the total, contiguous length of patch may not exceed 0.30 mi. (0.48 km). (Any full-lane patch exceeding 0.30 mi. in length is considered a pavement change). Patching must have a quantifiable area.

Potholes are bowl-shaped holes of various sizes occurring in the pavement surface.

### **Severity Levels**

There are no stratified severities for Patching/Potholes. They either are present or they are not.

## **RUTTING**

### **Description**

Rutting is a longitudinal surface depression in the wheelpath.

### **Severity Levels**

#### **LOW**

Ruts with a measured depth  $\geq 0.20''$  and  $\leq 0.49''$

#### **MED**

Ruts with a measured depth  $\geq 0.50''$  and  $\leq 0.99''$

#### **HIGH**

Ruts with a measured depth  $\geq 1.00''$

Ruts  $< 0.20''$  are not included in the distress calculations.

## **ROUGHNESS**

### **Description**

Roughness is the measurement of the unevenness of the pavement in the direction of travel. It is measured in units of IRI (International Roughness Index), inches per mile, and is indicative of ride comfort.

### **Severity Levels**

There are no stratified severity levels for roughness. The roughness (or smoothness) of a road surface can be defined by IRI in the following table.

**TABLE 3: IRI**

<b>IRI Descriptions</b>	
<b>Type of Road</b>	<b>Typical IRI ( in/mile )</b>
New Road, no noticeable roughness	<90
Small level of roughness	90 – 126
Road of average roughness	126 – 190
Road with above average roughness	190 – 253
Road with severe roughness	253 – 380
Nearly impassable	>380

## INDEX FORMULAS

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Note: All index formulas listed below contain MAE applicable to 0.02 mile (105.6 feet) interval.

### Alligator Crack Index

$$AC\_INDEX = 100 - 40 * [(\%LOW / 35) + (\%MED / 15) + (\%HI / 5)]$$

Where:

The values *%LOW*, *%MED* and *%HI* report the percentage of the observed pavement (0.02 mile, primary lane) that contains alligator cracking within the respective severities. These values range from 0 to 100.

*%LOW* = Percent of total area (primary lane, 0.02 in length), low severity

*%MED* = Percent of total area (primary lane, 0.02 in length), medium severity

*%HI* = Percent of total area (primary lane, 0.02 in length), high severity

Percent of total area is computed as:

$$\frac{\text{square foot area of alligator crack severity}}{0.02 \text{ mile} * \text{lane width}}$$

In AC\_INDEX, the denominators 35, 15, and 5 are the Maximum Allowable Extents (MAE) for each severity. In other words, we will allow up to 35% of low severity alligator cracking for a 0.02 interval before failure, 15% for medium severity, and so on. As you can see, if any single severity reaches MAE the resulting index value is 60, or failure.

### Longitudinal Crack Index

$$LC\_INDEX = 100 - 40 * [(\%LOW / 175) + (\%MED / 75) + (\%HI / 25)]$$

Where:

The values *%LOW*, *%MED*, and *%HI* report the length of longitudinal cracking within each severity as a percent of the section length (0.02 mile, primary lane).

These values are  $\geq 0$  and can exceed 100.

*%LOW* = Percent of interval length (primary lane, 0.02 in length), low severity

*%MED* = Percent of interval length (primary lane, 0.02 in length), medium severity

*%HI* = Percent of interval length (primary lane, 0.02 in length), high severity

Percent of interval length is computed as:

$$\frac{\text{length of respective longitudinal cracking}}{0.02 \text{ mile (105.6 feet)}}$$



In LC\_INDEX, the denominators 175, 75, and 25 are the Maximum Allowable Extents (MAE) for each severity. In other words, we will allow up to 175% of low severity alligator cracking for a 0.02 interval before failure, 75% for medium severity, and so on. As you can see, if any single severity reaches MAE the resulting index value is 60, or failure.

### **Structural Crack Index**

$$SC\_INDEX = [100 - ((100 - AC\_INDEX) + (100 - LC\_INDEX))]$$

**Structural Crack Index** is a combination of Alligator Cracking and Longitudinal Cracking, and is used in the SCR formula in lieu of AC and LC separately.

### **Transverse Crack Index**

$$TC\_INDEX = 100 - 40 * [(LOW / 21.1) + (MED / 4.4) + (HI / 2.6)]$$

Where:

The values *LOW*, *MED* and *HI* report a count of the total number of transverse cracks (reported to three decimals) within each severity level, where one transverse crack is equal to the lane width. These values are  $\geq 0$ .

LOW = Number of cracks in interval (primary lane, 0.02 in length), low severity

MED = Number of cracks in interval (primary lane, 0.02 in length), medium severity

HI = Number of cracks in interval (primary lane, 0.02 in length), high severity

Number of cracks is computed as:

$$\frac{\text{Total length of transverse cracks}}{\text{Lane width}}$$

In TC\_INDEX, the denominators 21.1, 4.4, and 2.6 are the Maximum Allowable Extents (MAE) for each severity. In other words, we will allow up to 21.1 low severity transverse cracks for a 0.02 interval before failure, 4.4 cracks for medium severity, and so on. As you can see, if any single severity reaches MAE the resulting index value is 60, or failure.

## Patching Index

$$\text{PATCH\_INDEX} = 100 - 40 * (\% \text{PATCHING} / 80)$$

Where:

The value *%PATCHING* reports the percentage of the observed pavement (0.02 mile, primary lane) that contains patching/potholes. This value ranges from 0 to 100.

*%PATCHING* = Percent of total area (primary lane, 0.02 in length)

Percent of total area is computed as:

$$\frac{\text{square foot area of patching/potholes}}{0.02 \text{ mile} * \text{lane width}}$$

There are no severity levels for patching. It either exists or does not.

In *PATCH\_INDEX*, the denominator 80 is the Maximum Allowable Extent (MAE) for each severity. In other words, we will allow up to 80% patching for a 0.02 interval before failure. As you can see, if patching/potholes reaches MAE the resulting index value is 60, or failure.

## Rutting Index

$$\text{RUT\_INDEX} = 100 - 40 * [(\% \text{LOW} / 535) + (\% \text{MED} / 205) + (\% \text{HI} / 40)]$$

Where:

20 rut depth measurements are taken per 0.02 interval for each of 2 wheel paths (left and right), resulting in a total of 40 measurements taken for both wheel paths. *Each wheelpath is analyzed independently for rut severities.* The values *%LOW*, *%MED* and *%HI* are a *total percentage* of left wheelpath percentage and right wheelpath percentage added together for the respective severity. These values range from 0 to 200.

*%LOW* = Percent of LOW ruts in left wheelpath based on 20 ruts, plus percent of LOW ruts in right wheelpath based on 20 ruts.

*%MED* = Percent of MED ruts in left wheelpath based on 20 ruts, plus percent of MED ruts in right wheelpath based on 20 ruts.

*%HI* = Percent of HI ruts in left wheelpath based on 20 ruts, plus percent of HI ruts in right wheelpath based on 20 ruts.

Percent of rut measurements within each severity can also be computed as:

$$\frac{\text{total number of ruts within each severity in both wheelpaths}}{20} * 100$$

In *RUT\_INDEX*, the denominators 535, 205, and 40 are the Maximum Allowable Extents for each severity. In other words, the formula allows up to 535% low severity

ruts for a 0.02 interval before. However, since 200 is the highest measurable percentage allowed, 535% is unattainable and therefore, no amount of LOW severity rutting will cause the RUT\_INDEX to fail a road. Similarly, since the MAE for MED severity rutting is 205, no amount of MED severity rutting will cause the RUT\_INDEX to reach 60 and fail the road. As you can see, LOW severity rutting reaches MAE the resulting index value is 60, or failure. This formula was intentionally designed to minimize the impact of LOW and MED severity rutting on RUT\_INDEX.

### **Roughness Condition Index (Asphalt)**

$$RCI = 32 * [5 * (2.718282 ^ {(-0.0041 * AVG IRI)})]$$

Where:

The value *AVG IRI* reports the average value of the Left IRI and Right IRI measurements for the interval (0.02 mile, primary lane). This value can range from approximately 40 to 999.0.

Average IRI is computed as:

$$\frac{\text{Left wheelpath IRI} + \text{Right wheelpath IRI}}{2}$$

There is no applicable threshold for failure for this index.

### **Roughness Condition Index (Concrete)**

$$RCI = -0.0012(IRI^2) + 0.0499(IRI) + 99.542$$

For concrete, PCR = RCI

### **Surface Condition Rating Index**

**SCR** = *Lowest* Index Value Of: [ SC\_INDEX, TC\_INDEX, PATCH\_INDEX, RUT\_INDEX]

*Note: The modified SCR equation above combines AC\_INDEX and LC\_INDEX, and considers that a single AC/LC index value of the Structural Crack Index (SC\_INDEX). The lowest of the four computed index values (SC\_INDEX, TC\_INDEX, PATCH\_INDEX, or RUT\_INDEX) becomes the SCR.*

Where:

See above for determinations of SC\_INDEX, TC\_INDEX, PATCH\_INDEX and RUT\_INDEX.

The threshold for failure for this index is SCR = 60.

## Data Collection Vehicle Subsystems

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Data on paved roads in Cycle 5 is collected by FHWA using a Pathway Services Inc. Data Collection Vehicle (DCV), called PathRunner. The DCV is driven in the primary-direction lane at posted speed limits and less.

### CAMERAS

Forward-facing and rear-facing video is collected as .jpg digital imagery at a frequency of 26.4 feet.

Two forward-facing cameras are mounted above the vehicle cab, one pointed straight ahead and the other to the right shoulder providing seamless 120 degree viewing.

<b>CAMERA SPECIFICATIONS</b>	
<b>Two Forward/ One Rear Facing</b>	
Camera lens/type	FUJINON CCTV LENS H16x10B-Y41
Focal length	10 mm – 160 mm
Image size	8.8 mm x 6.6mm
Image format	*.jpg
Image resolution	HD 2000 X 1200
Image pixel size	depends on distance
Zoom ratio	16x
Max Relative Aperture	1:2.5
Iris range	F25-T800 (Equivalent to F800)

Pavement images are created using a Laser Scan Imaging System. This system is composed of a single high resolution line-scan camera and two lasers configured to image an approximate 11-foot wide lane with 1 mm resolution.

<b>CAMERA SPECIFICATIONS</b>	
<b>Pavement Line Scan</b>	
Image size	4280 pixels/line
Image width	4 meters (3950 mm nominal)
Laser class	3B
Power	250W
Vehicle speed limitations	62 mph
Environment	Dry pavement, day or night
Sensor size (approx)	300 mm(H) x 375 mm(L) x 200 mm(D)
Image frame length	26.4 feet

### **DMI (Distance Measuring Instrument)**

The DMI (Distance Measuring Instrument) obtains road length measurements that are accurate to 0.1% for speeds up to 60 mph. The DMI is connected to the hub of the rear wheel on the driver's side, and is calibrated to the revolutions of the rear vehicle axle on a regular basis.

### **ROUGHNESS (IRI)**

The collection system includes a South Dakota type laser profiler manufactured based on active Class 1 ASTM E950 standards. The dynamic profile of the pavement surface is collected from which the IRI roughness data is computed. The sensors include one accelerometer on each wheelpath, one height sensor (laser) on each wheelpath, and a distance transducer.

<b>IRI SPECIFICATIONS</b>	
Reported IRI units	Inches/mile
Vehicle speed limitations	12-62 mph
IRI equipment certification	Texas Transportation Institute (TTI)
Wavelengths accommodated	6 in. – 300 feet
IRI computed & reported	World Bank Technical Paper Number 46
Environment	Dry pavement, day or night, above 32 degrees F
Adherence to specifications	ASTM E950-98 (2004), ASTM E 1926-08, AASHTO MP 11-08, AASHTO PP 49-08

### **RUTTING**

Rutting depths are measured using an INO Laser Rut Measurement System (LRMS). This system is a transverse profiling device that detects and characterizes pavement rutting. The LRMS can acquire full 4 meter width profiles of a pavement lane at normal traffic speeds and uses two laser profilers that digitize transverse sections of the pavement.

<b>RUTTING SPECIFICATIONS</b>	
Reported rut depth units	Inches
Vehicle speed limitations	Up to 62 mph
Sampling rate	30-150 profiles/second
Transverse resolution	1280 points/profile
Transverse field-of-view	4 m
Depth accuracy (nominal)	+/- 1 mm
Environment	Dry pavement, day or night, above 32 degrees F
Adherence to specifications	ASTM E1703M-95 (reapproved 2005)



## **GPS & INERTIAL SYSTEMS**

GPS is collected by an onboard system employing Omnistar real time correction and a gyroscope Inertial Measuring Unit (IMU) to provide accurate positioning data in instances of satellite obstruction. All GPS coordinates are tied to image and linear distance measurements.

<b>GPS SPECIFICATIONS</b>	
Static accuracy	Sub-meter
Dynamic accuracy	2-3 meters
Receiver	12 satellite tracking
Coordinate system	Lat Lon WGS 84
Environment	Day or night
Cross-slope	+ - 0.1 degrees
Grade	+ - 0.1 degrees

### GPS on Manually Rated Roads (MRR)

Parking areas, some roads, and other paved areas that are not fully drivable with the DCV are collected manually by field technicians. GPS is collected for these routes using portable Trimble GPS backpack units.

## Geodatabase – Background and Metadata

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In addition to this park report, a *geodatabase* containing both tabular and spatial data specific to this park has been provided. All data disseminated in the preceding report has been obtained from the tables and fields within said geodatabase. The geodatabase can be referenced for tabular data via Microsoft Access or for both tabular and spatial data via ESRI's ArcGIS Suite of software which consists of; ArcMap, ArcCatalog and ArcExplorer. Consolidating the RIP data into one database creates a seamless relationship of tables and geographic data. It will allow RIP to facilitate easier updates and enhancements in the future.

A geodatabase can be thought of as simply a database containing spatial data. Many different tables are contained with the park's geodatabase. A complete and thorough description of the tables and fields contained within this geodatabase can be found in the *metadata*. The metadata is attached directly within the geodatabase and can be accessed via ESRI's ArcCatalog.

## **GLOSSARY OF TERMS AND ABBREVIATIONS**

<b><u>TERM OR ABBREVIATION</u></b>	<b><u>DESCRIPTION OR DEFINITION</u></b>
AC	Alligator Cracking
CRS	Condition Rating Sheets (Section 5)
DCV	Data Collection Vehicle
Excellent	Excellent rating with an index value of 95 to 100
Fair	Fair rating with an index value from 61 to 84
FUNCT_CLASS	Functional Classification (see Route ID, Section 2)
Good	Good rating with an index value from 85 to 94
IRI	International Roughness Index
Lane Width	Width from road centerline to fogline, or from centerline to edge-of-pavement when no fogline exists
LC	Longitudinal Cracking
MRR	Manually Rated Route
MRL	Manually Rated Line
MRP	Manually Rated Polygon
N/A	Not Applicable
NC	Not Collected
PATCH	Patching and Potholes
Paved Width	Width from edge-of-pavement to edge-of-pavement
PCR	Pavement Condition Rating
PKG	Parking Area
Poor	Poor rating with an index value of 0 to 60
RCI	Roughness Condition Index
SC	Structural Cracking
SCR	Surface Condition Rating
TC	Transverse Cracking